

09/463776

1 / 55

FIG.1

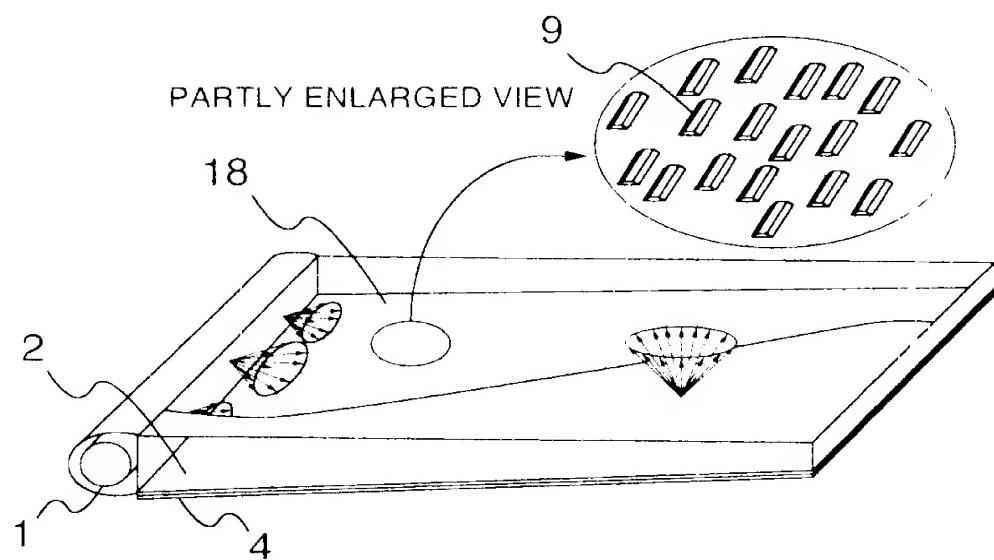


FIG.2

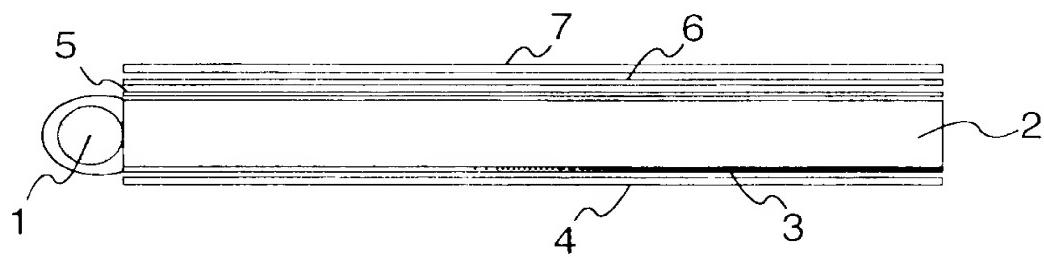


FIG.3

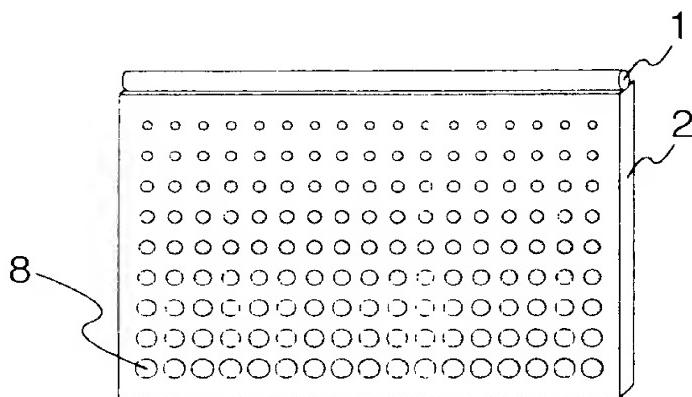
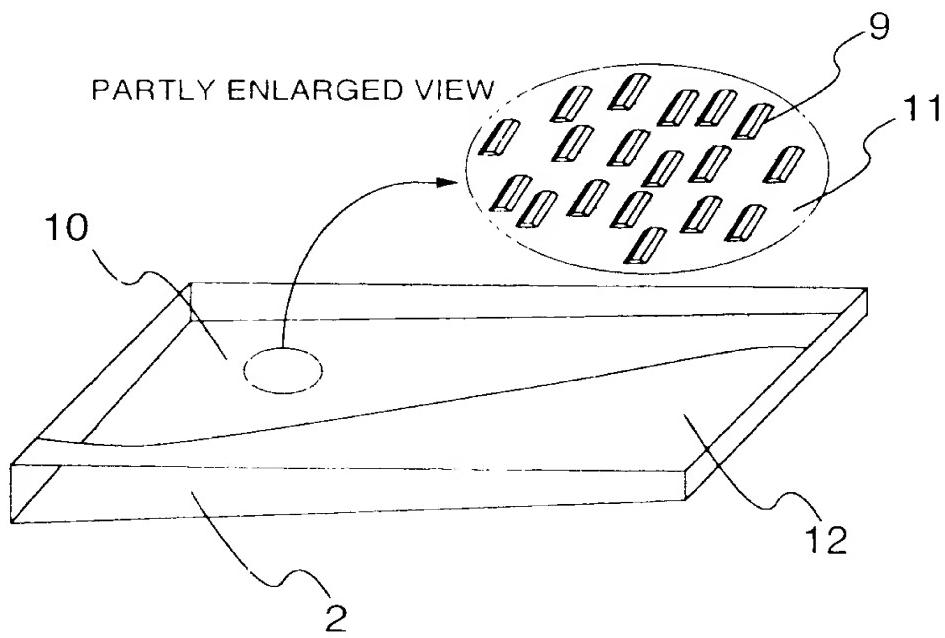


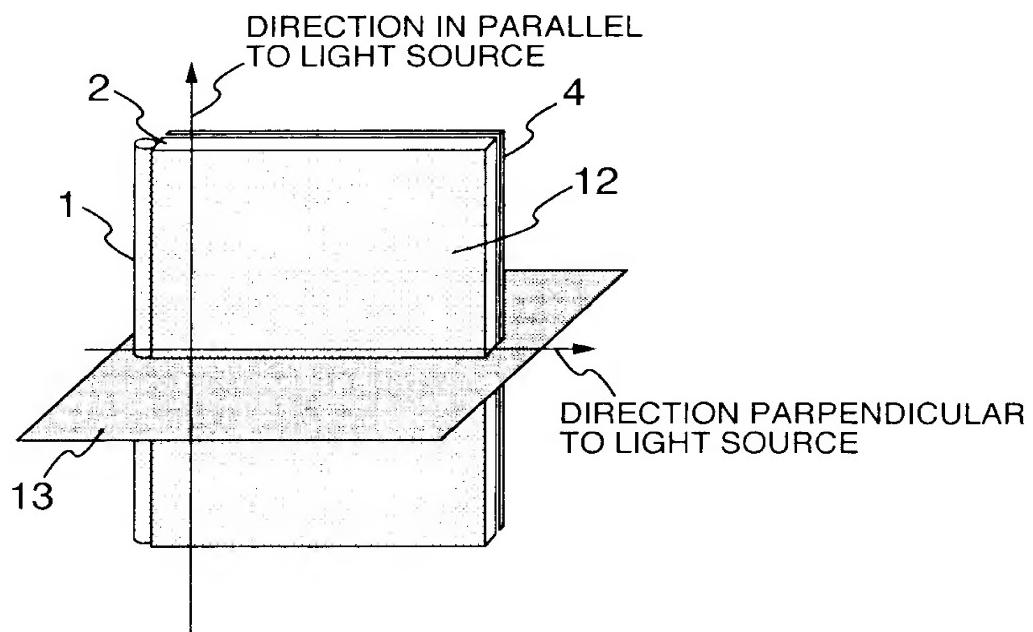
FIG.4

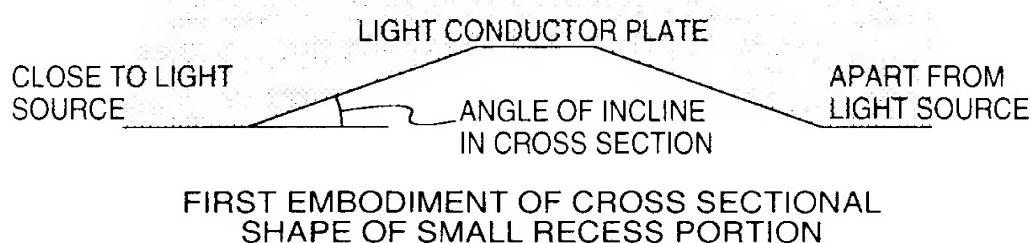
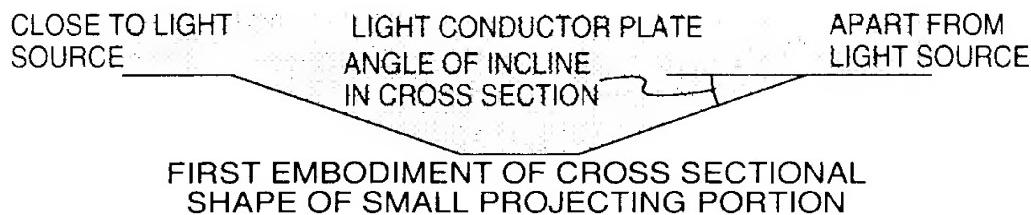
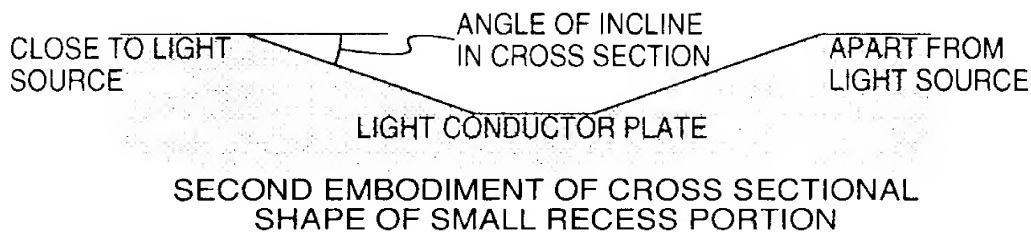
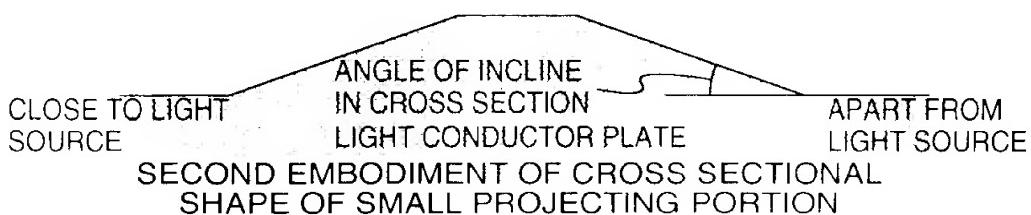


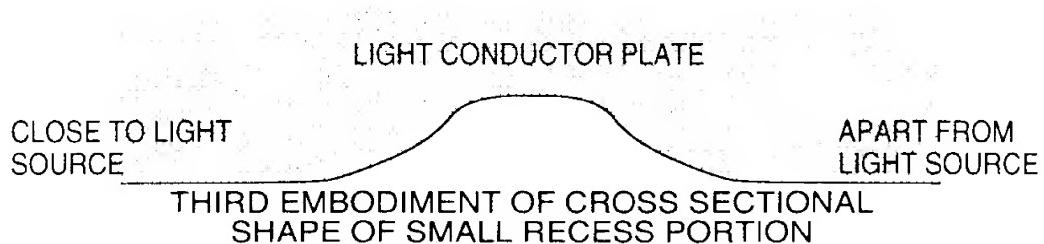
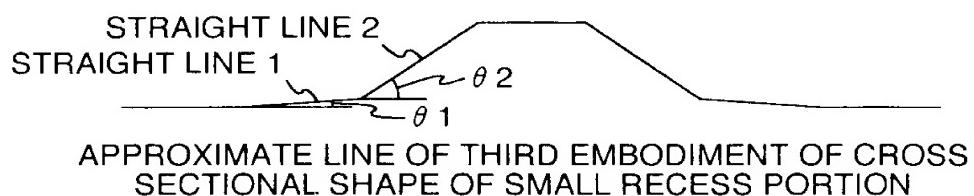
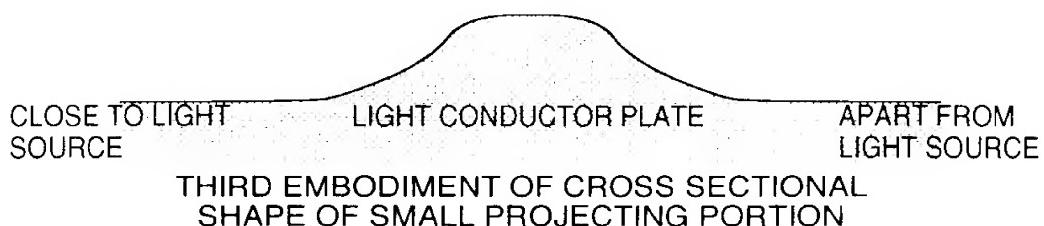
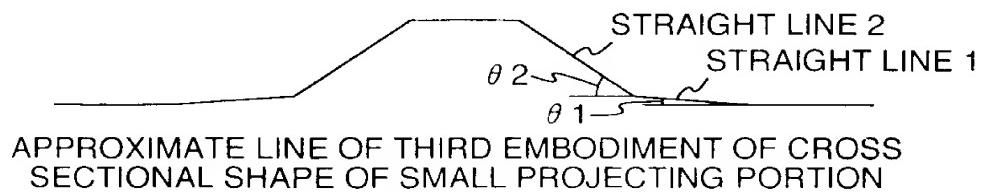
## FIG.5

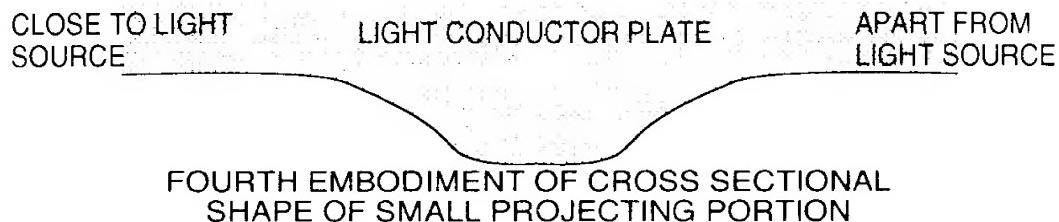
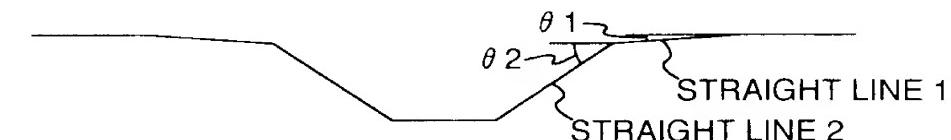
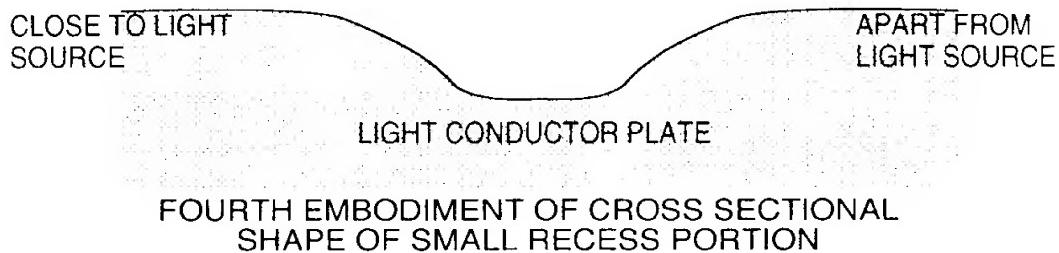
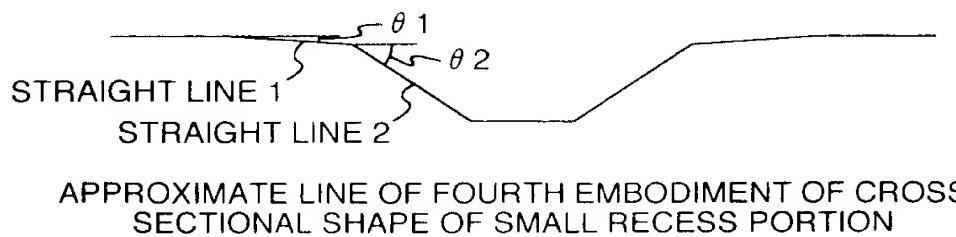
KIND OF DOT	SMALL PROJECTING PORTION OR SMALL RECESS PORTION		
REFLECTING FILM	NO		YES
ANGLE OF INCLINE OF INCLINED SURFACE OF DOT	7~43°	50~85°	30±10°
DISTRIBUTION OF ANGLES OF INCLINE OF INCLINED SURFACES OF DOTS	ANGLE OF INCLINE IS SMALLER AS CLOSER TO LIGHT SOURCE		
HEIGHT AND DEPTH OF DOT	2-100 $\mu\text{m}$		
DISTRIBUTION OF HEIGHTS AND DEPTHS OF DOTS	HEIGHT AND DEPTH ARE LOWER AS CLOSER TO LIGHT SOURCE		
SHAPE OF FLAT SURFACE OF DOT	CIRCLE OR SUBSTANTIALLY RECTANGULAR SHAPE		
DISTRIBUTION OF DENSITIES OF DOTS	DENSITY OF DOT IS SMALLER AS CLOSER TO LIGHT SOURCE		
DISTRIBUTION OF SHAPES OF DOTS	AREA OF DOT IS SMALLER AS CLOSER TO LIGHT SOURCE AREA OF DOT IS SMALLER AS PORTION REQUIRES CONFUSION		
SIZE	$\leq$ 0.2 SQUARE mm		
ARRANGEMENT OF DOT	RANDOM OR NON RANDOM IN CASE SHAPE OF FLAT SURFACE IS RECTANGULAR, ARRANGEMENT IS MADE SO THAT LONGER LINE IS SUBSTANTIALLY IN PARALLEL TO LIGHT SOURCE		
SUB MATERIAL	REFLECTING PLATE  (DIFFUSION PLATE)	REFLECTING PLATE  (LIGHT CONDENSING PLATE)  (DIFFUSION PLATE)	(LIGHT CONDENSING PLATE)  (DIFFUSION PLATE)

FIG.6



**FIG.7A****FIG.7B****FIG.7C****FIG.7D**

**FIG.8A****FIG.8B****FIG.8C****FIG.8D**

**FIG.9A****FIG.9B****FIG.9C****FIG.9D**

09/463776

8 / 55

FIG.10A

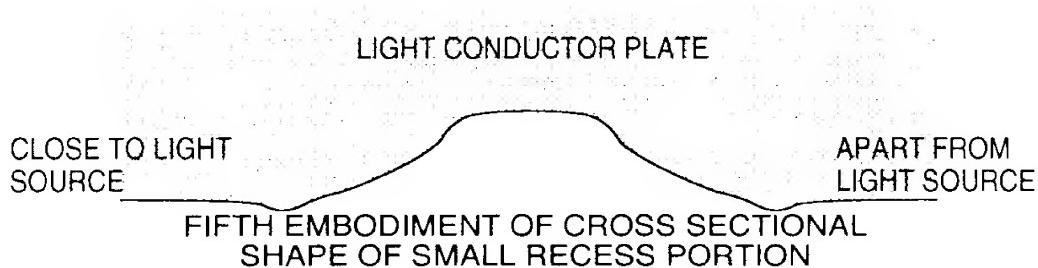


FIG.10B

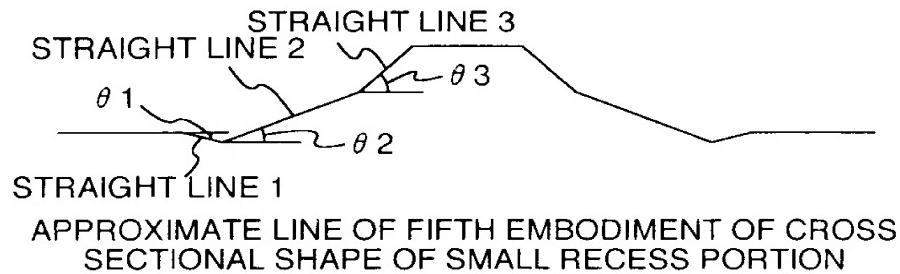


FIG.10C

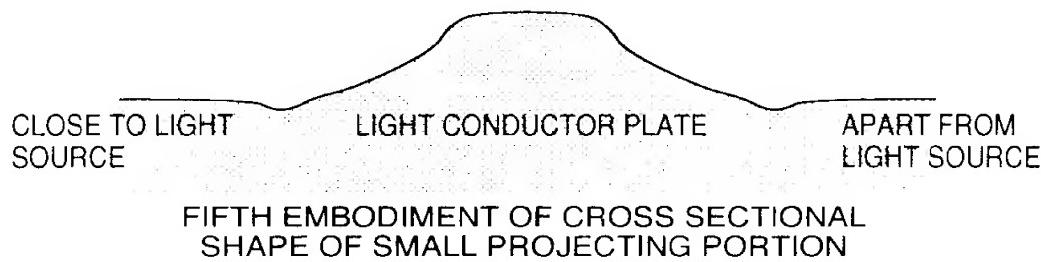
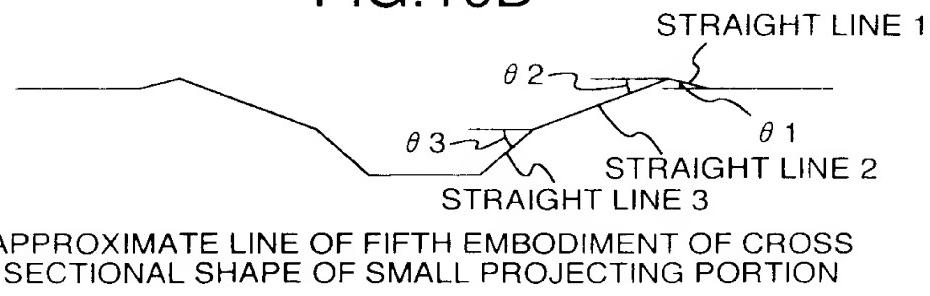
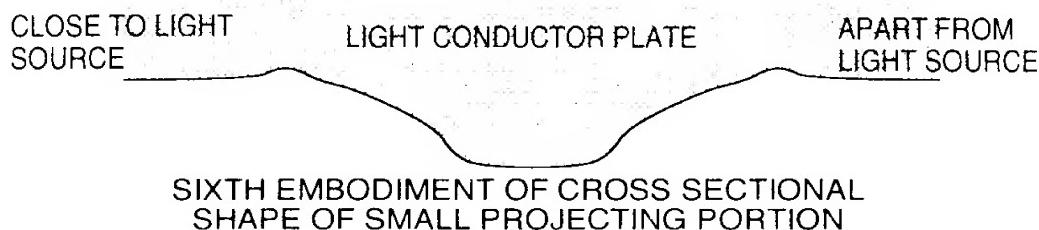
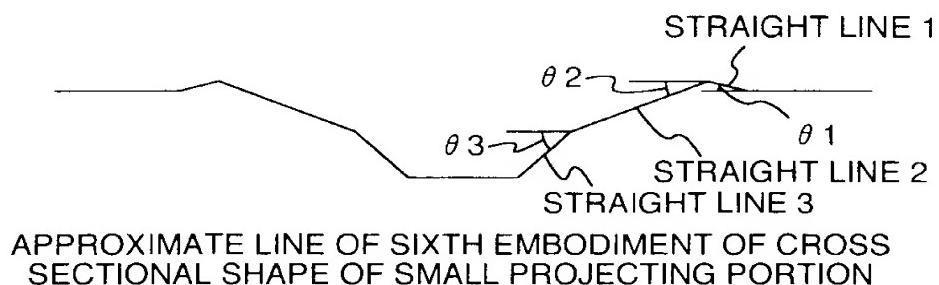
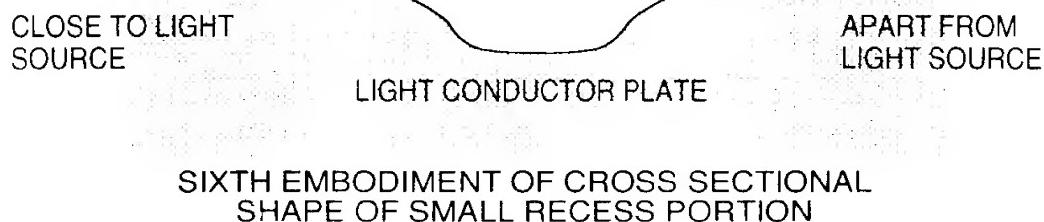
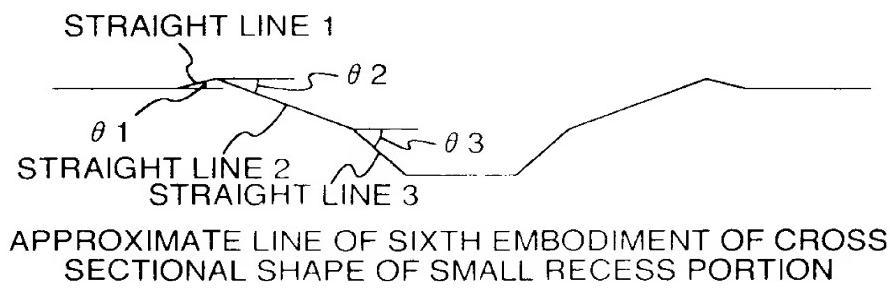


FIG.10D



**FIG.11A**

EXPLANATORY VIEW NO.5 OF ANGLE OF INCLINE

**FIG.11B****FIG.11C****FIG.11D**

09/463775

10 / 55

FIG.12A

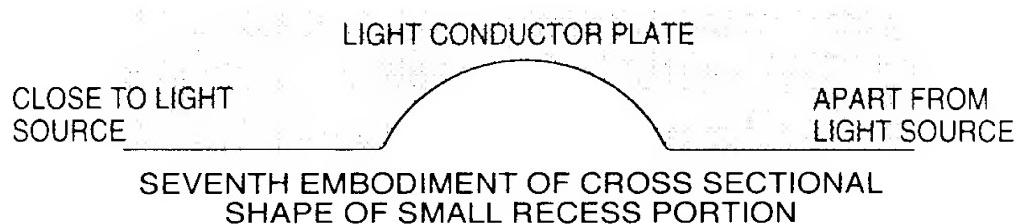


FIG.12B

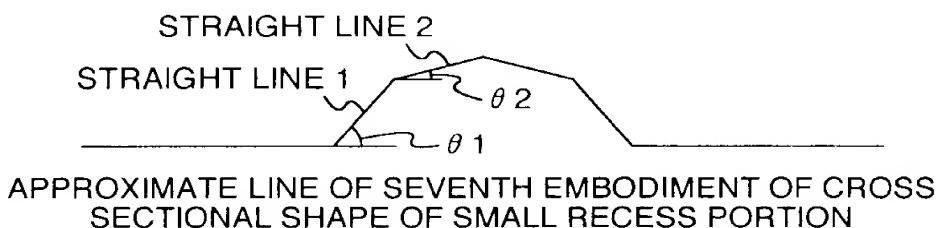


FIG.12C

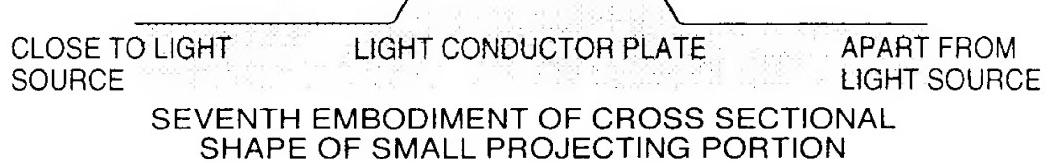
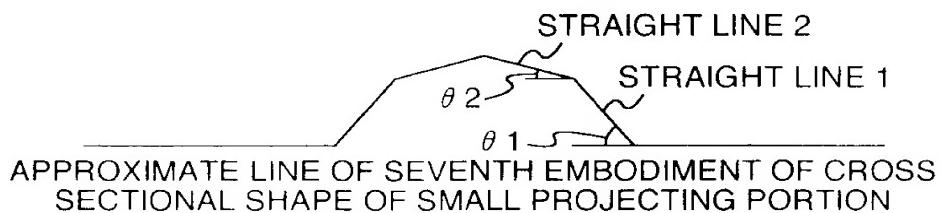
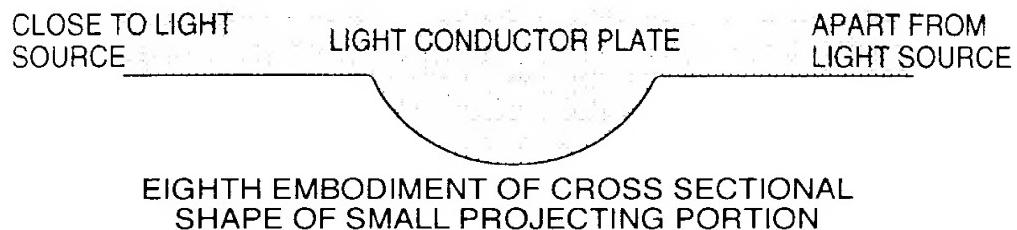
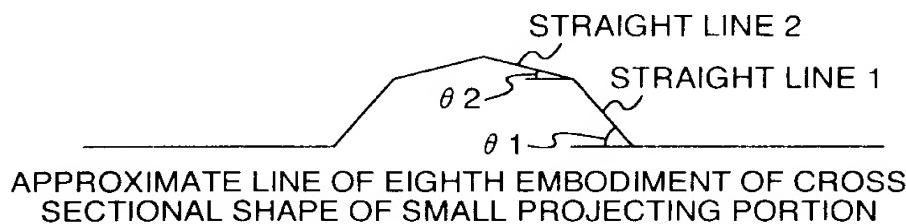
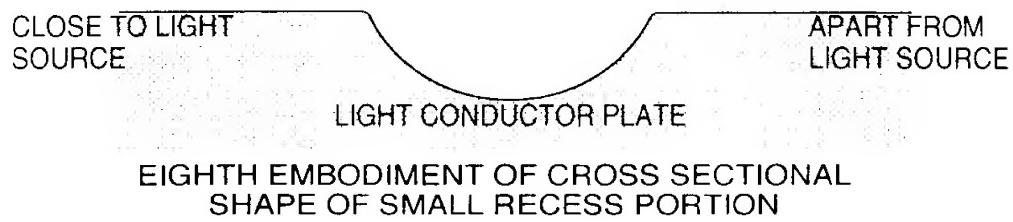
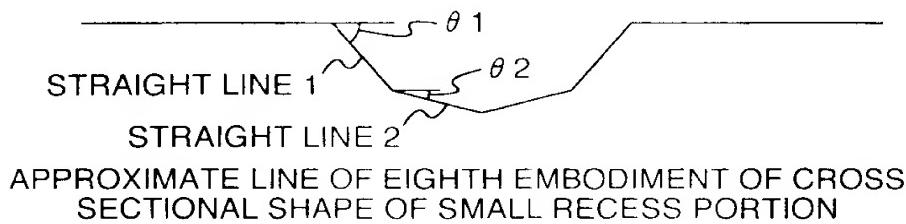


FIG.12D



**FIG.13A****FIG.13B****FIG.13C****FIG.13D**

09/463776

12 / 55

FIG.14A

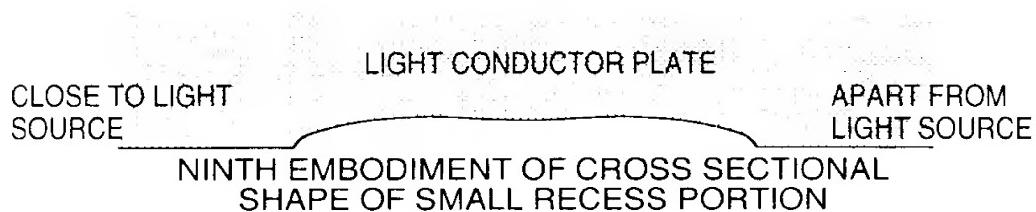


FIG.14B

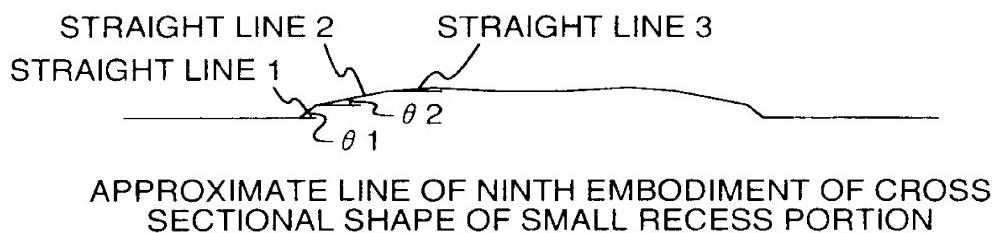


FIG.14C

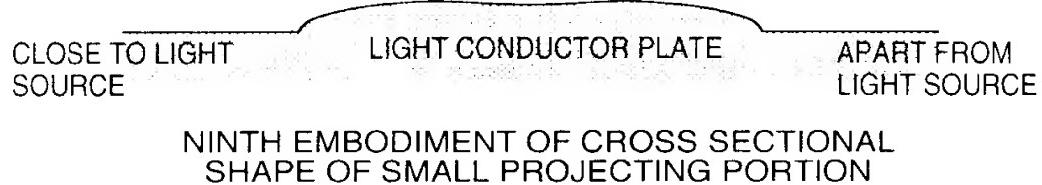
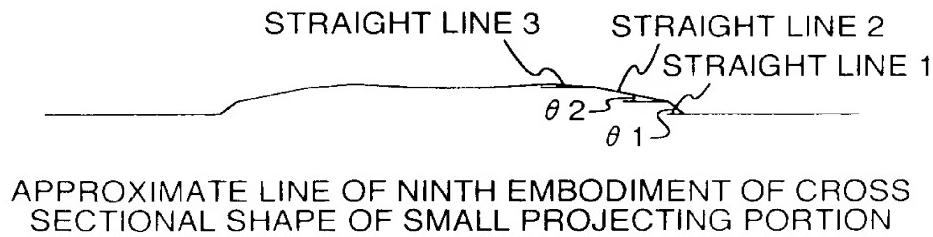


FIG.14D



03,463776

13 / 55

FIG. 15A

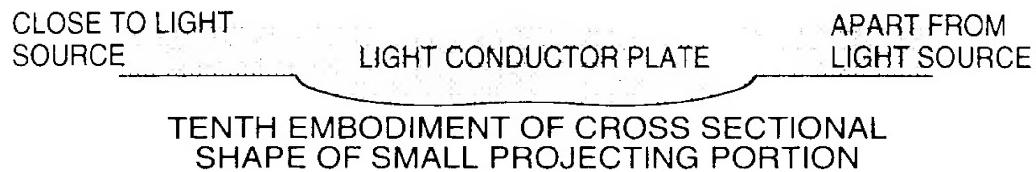
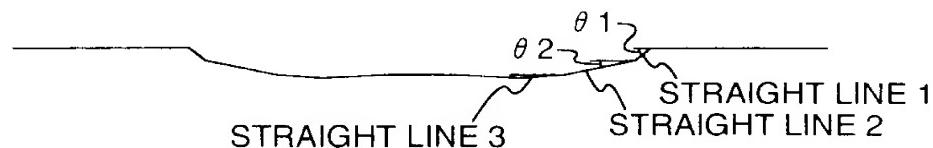


FIG. 15B



APPROXIMATE LINE OF TENTH EMBODIMENT OF CROSS  
SECTIONAL SHAPE OF SMALL PROJECTING PORTION

FIG.15C

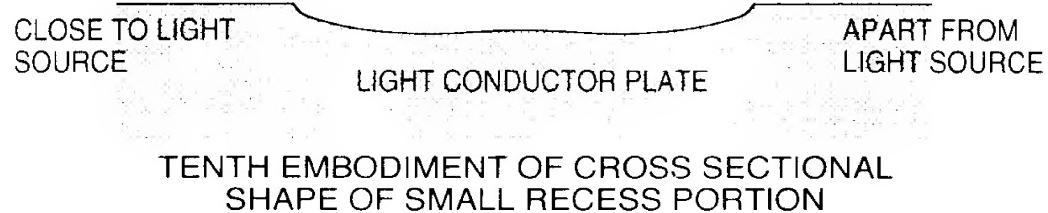
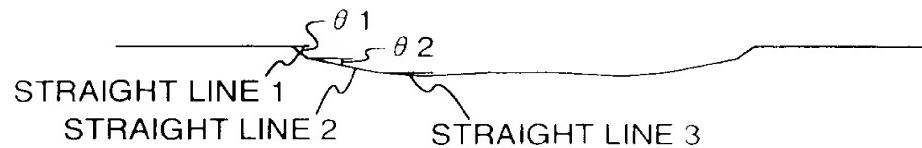
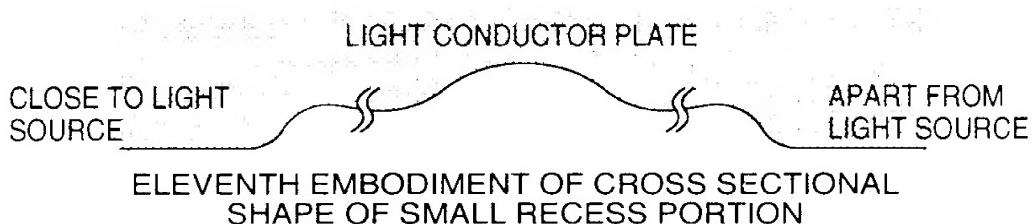
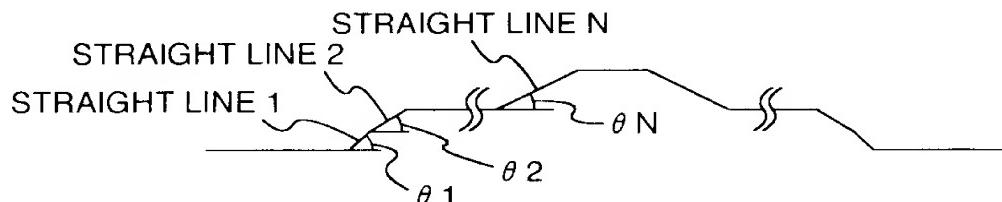


FIG. 15D



APPROXIMATE LINE OF THIRD EMBODIMENT OF CROSS  
SECTIONAL SHAPE OF SMALL RECESS PORTION

**FIG.16A****FIG.16B**

APPROXIMATE LINE OF ELEVENTH EMBODIMENT OF CROSS SECTIONAL SHAPE OF SMALL RECESS PORTION

$$\text{ANGLE OF INCLINE IN CROSS SECTION} = \frac{\sum_{n=1}^N \theta_n \times L_n \times \sin(\theta_n + \theta)}{\sum_{n=1}^N L_n \times \sin(\theta_n + \theta)}$$

$L_n$  = LENGTH OF STRAIGHT LINE  $n$

$\theta$  = VALUE DETERMINED IN ACCORDANCE WITH REFRACTIVE INDEX OF LIGHT CONDUCTOR PLATE  
ABOUT 18 DEGREES IS SUITABLE IN CASE OF REFRACTIVE INDEX OF LIGHT CONDUCTOR PLATE =  $1.47 \pm 0.1$

$$\text{ANGLE OF INCLINE IN CROSS SECTION} = \frac{\theta_1 \times L_1 \times \sin(\theta_1 + \theta) + \theta_2 \times L_2 \times \sin(\theta_2 + \theta)}{L_1 \times \sin(\theta_1 + \theta) + L_2 \times \sin(\theta_2 + \theta)}$$

$L_1$  = LENGTH OF STRAIGHT LINE 1

$L_2$  = LENGTH OF STRAIGHT LINE 2

$\theta$  = VALUE DETERMINED IN ACCORDANCE WITH REFRACTIVE INDEX OF LIGHT CONDUCTOR PLATE  
ABOUT 18 DEGREES IS SUITABLE IN CASE OF REFRACTIVE INDEX OF LIGHT CONDUCTOR PLATE =  $1.47 \pm 0.1$

09/463776

15 / 55

FIG.17A

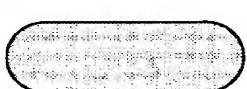


FIG.17B



FIG.17C



FIG.17D



FIG.17E

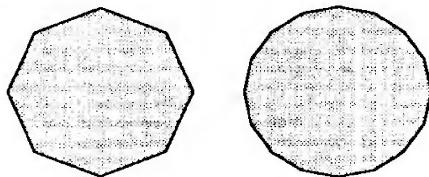
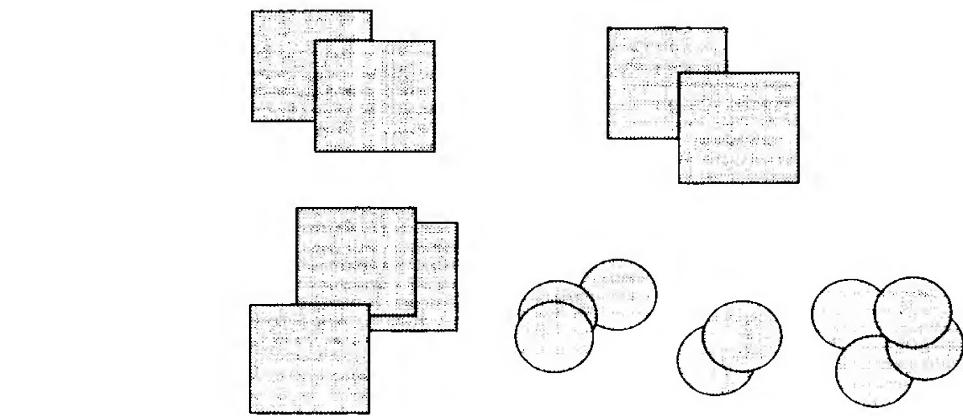


FIG.17F



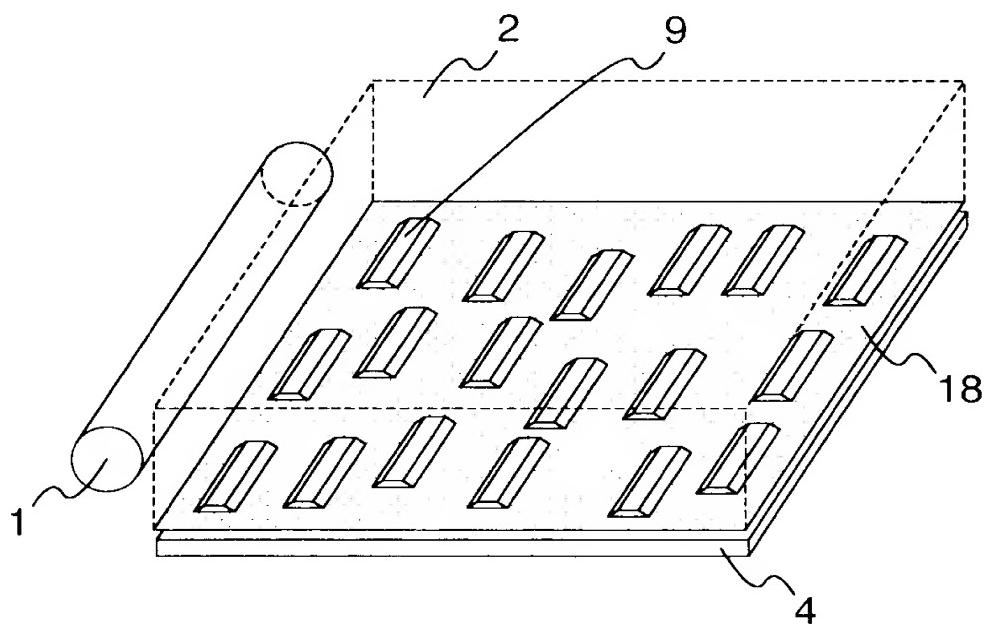
FIG.17G



09/463776

16 / 55

FIG.18



09/463776

17 / 55

FIG.19

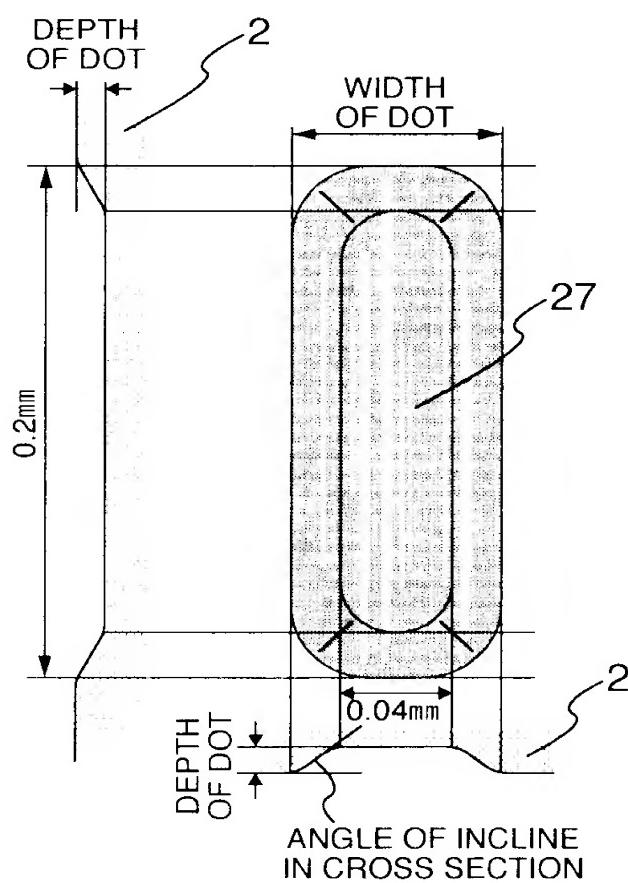
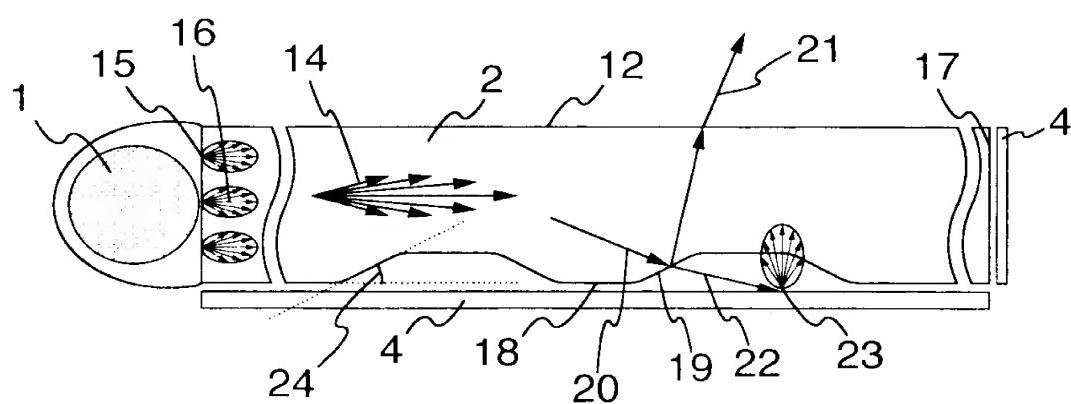
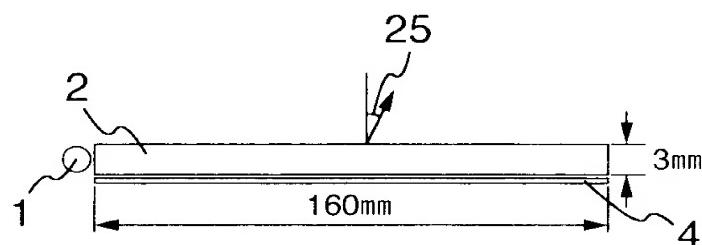
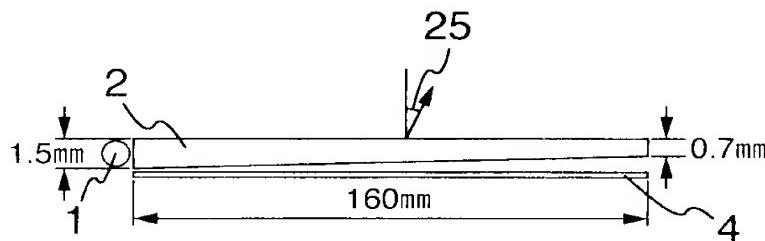


FIG.20

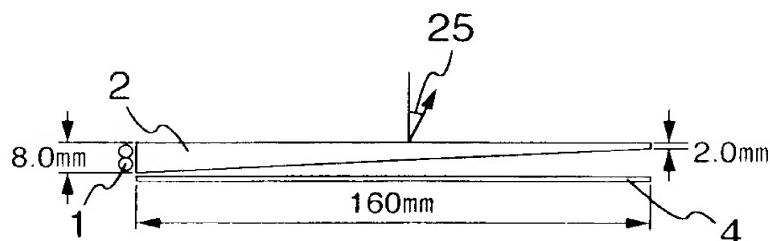


**FIG.21A**

EMBODIMENT 1-1  
CROSS SECTIONAL SHAPE OF  
LIGHT CONDUCTOR PLATE

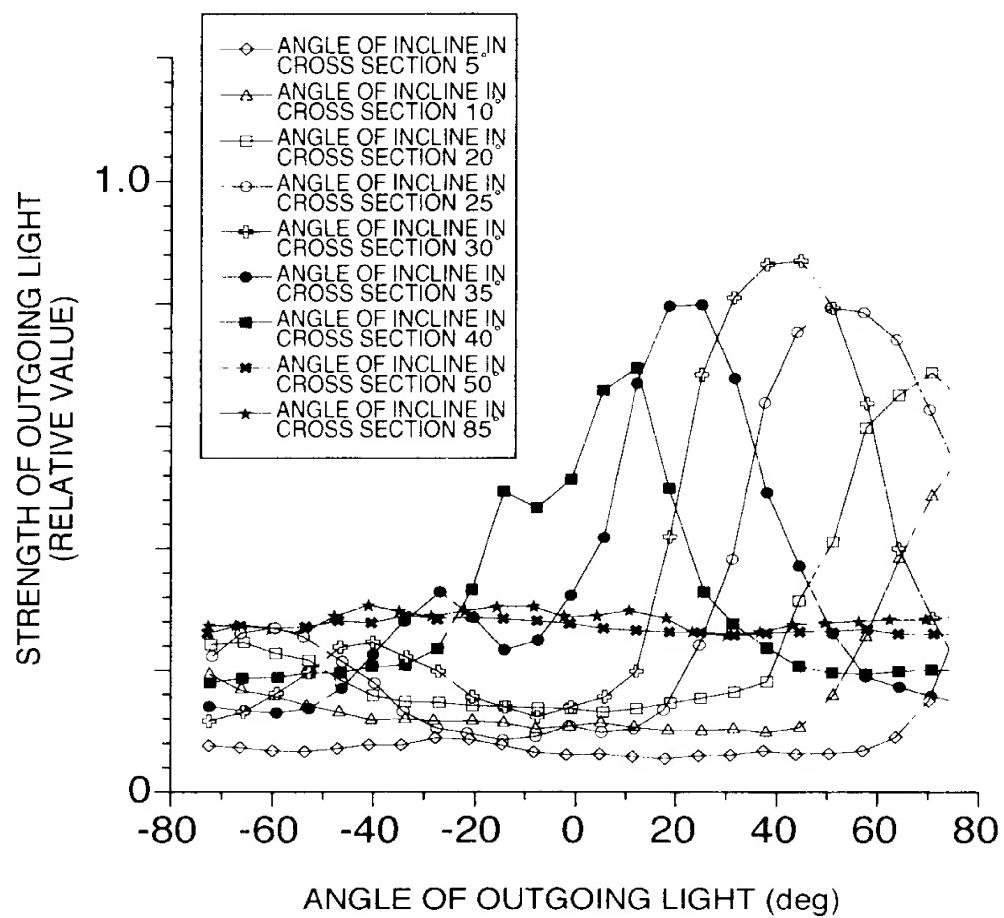
**FIG.21B**

EMBODIMENT 1-2  
CROSS SECTIONAL SHAPE OF  
LIGHT CONDUCTOR PLATE

**FIG.21C**

EMBODIMENT 1-3  
CROSS SECTIONAL SHAPE OF  
LIGHT CONDUCTOR PLATE

FIG.22



09/463776

21 / 55

FIG.23

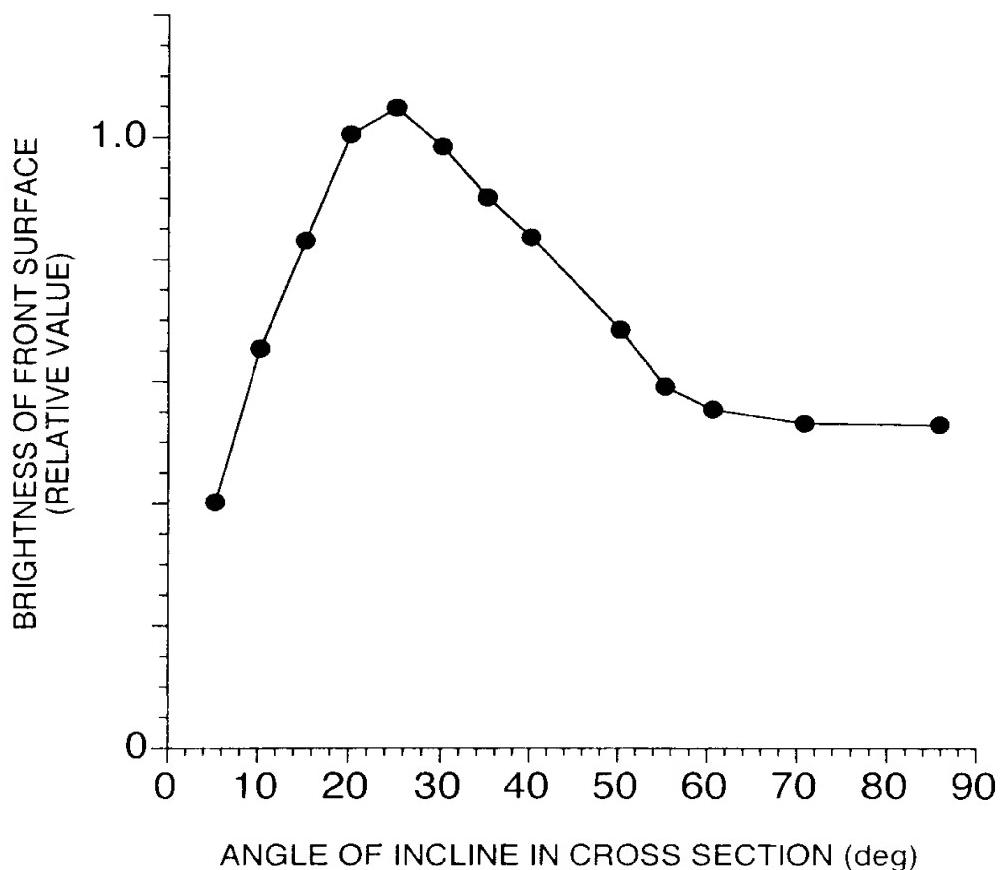
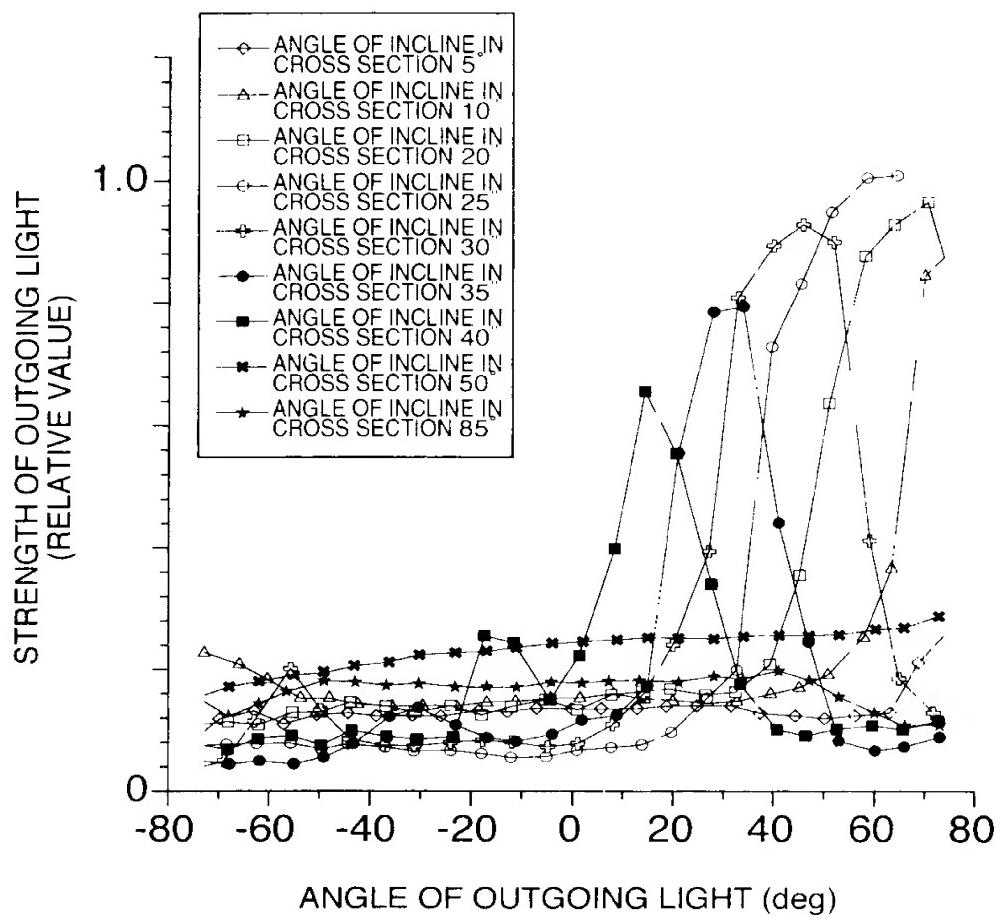


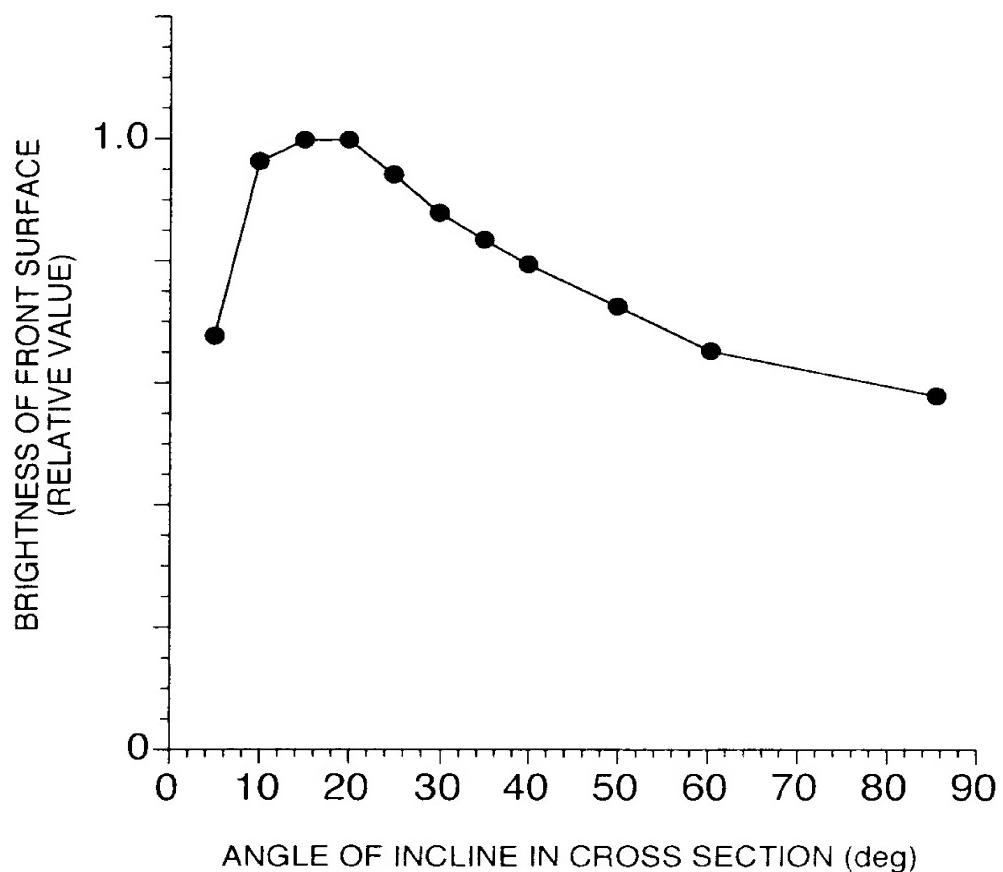
FIG.24



03/483775

23 / 55

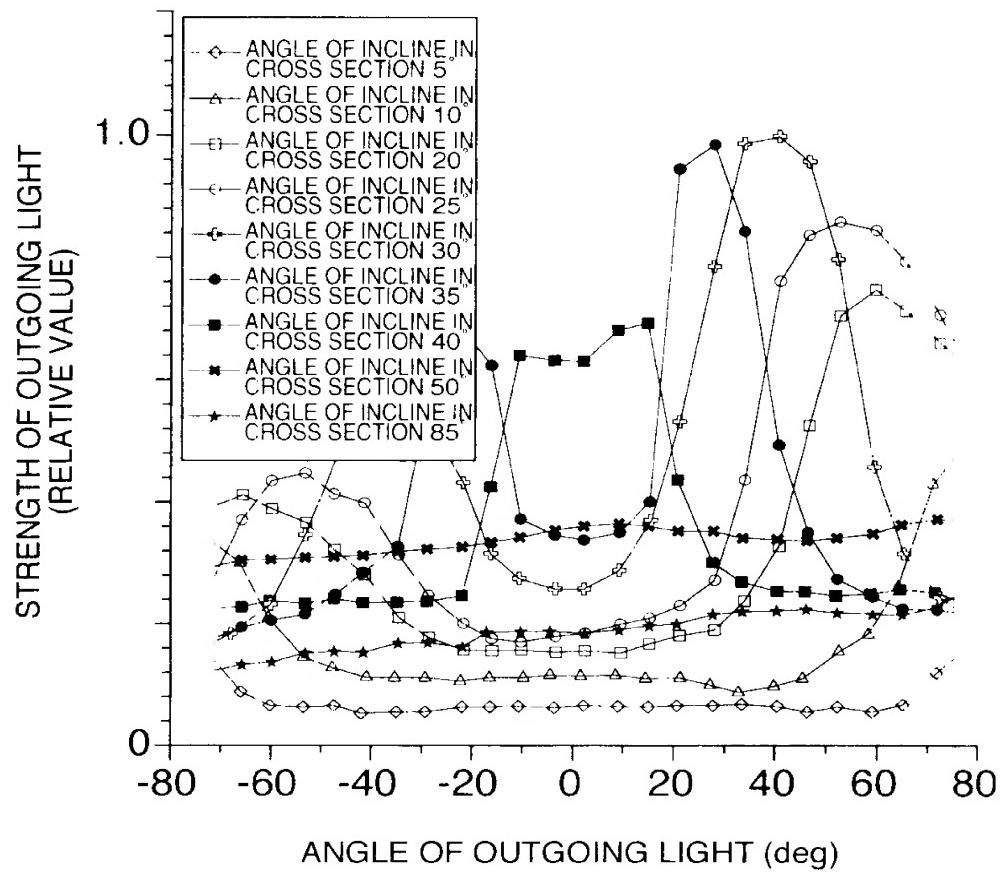
FIG.25



9/463776

24 / 55

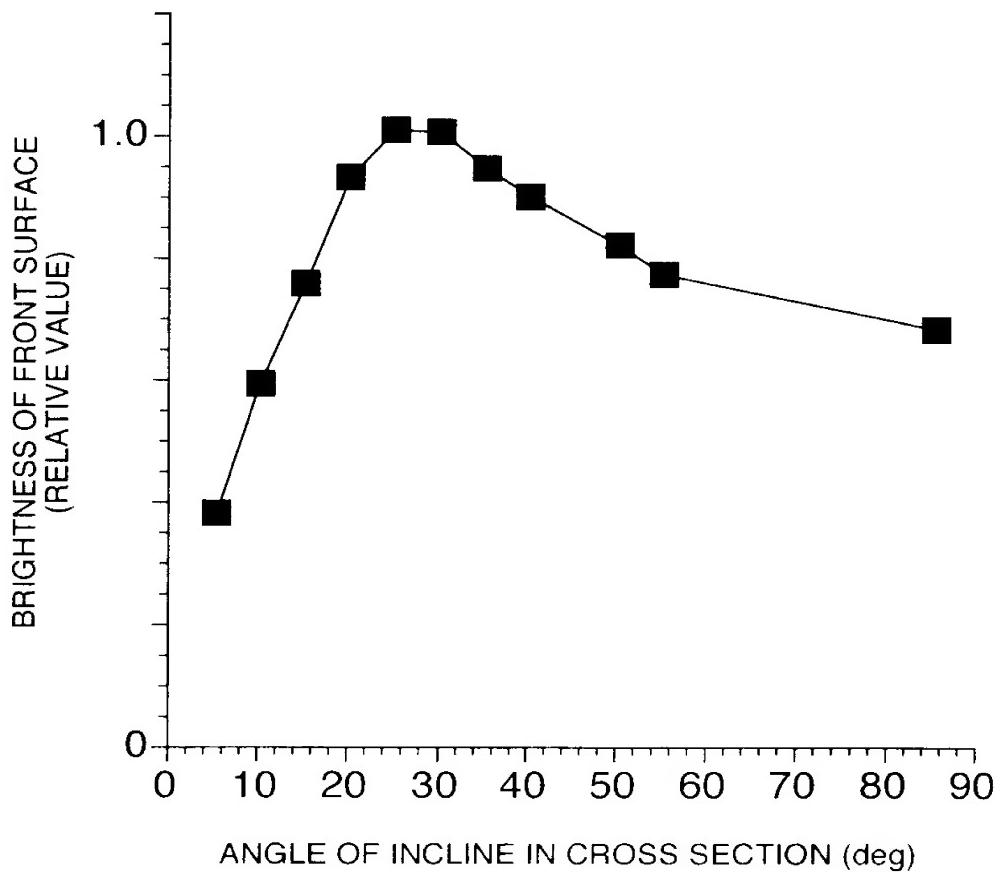
FIG.26

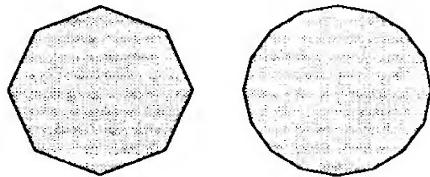
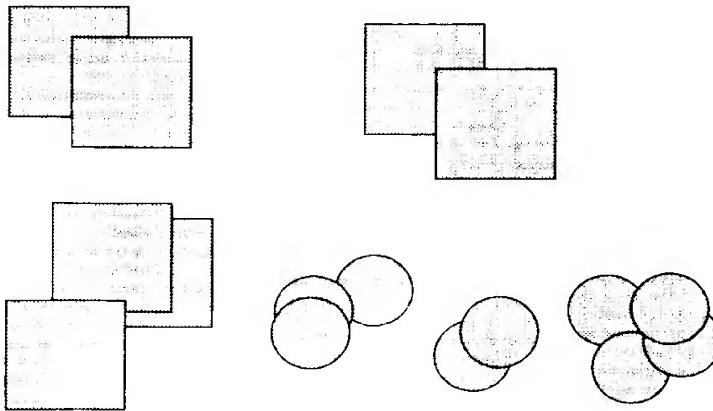


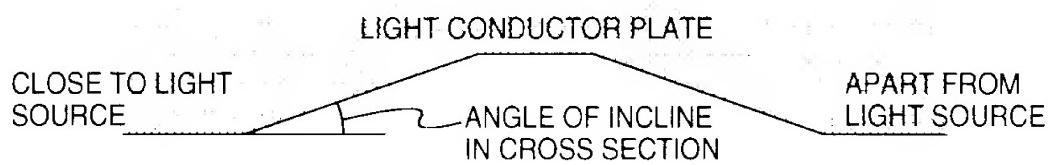
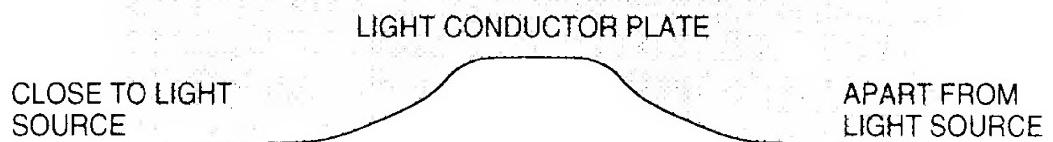
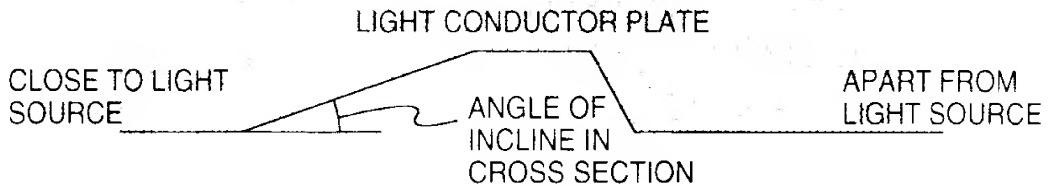
09/463776

25 / 55

FIG.27



**FIG.28A****FIG.28B****FIG.28C****FIG.28D****FIG.28E****FIG.28F****FIG.28G**

**FIG.29A****FIG.29B****FIG.29C**

09/463775

28 / 55

FIG.30

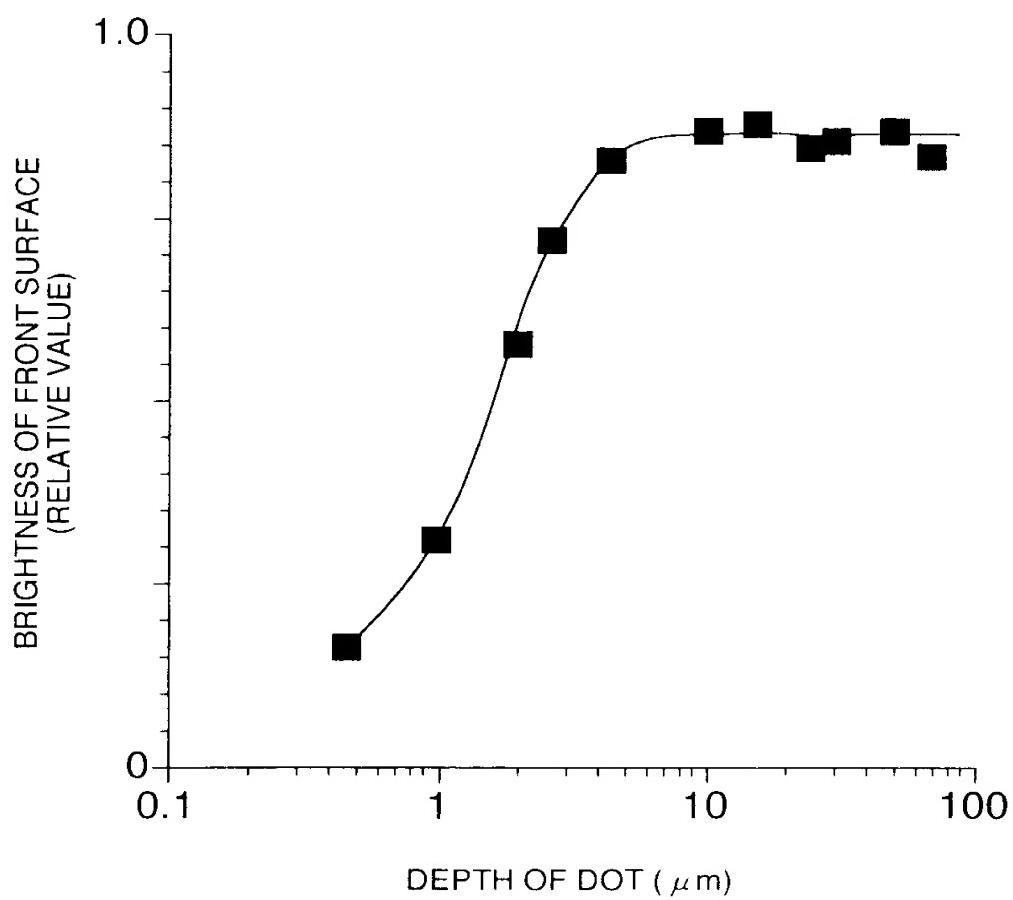
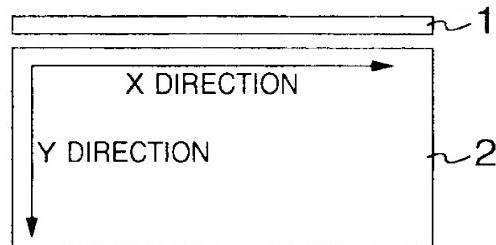


FIG.31

SHAPE	MEMBER	SIZE(X DIRECTION $\mu\text{m}$ )						
		10	20	50	100	200	400	800
CIRCULAR SHAPE, SQUARE	NONE	○	○	○	△	✗	✗	✗
	DIFFUSION PLATE	○	○	○	○	△	✗	✗
	DIFFUSION PLATE + ONE LIGHT CONDUCTOR PLATE	○	○	○	○	○	△	✗
	DIFFUSION PLATE + TWO LIGHT CONDUCTOR PLATES	○	○	○	○	○	○	△
SUBSTANTIALLY RECTANGULAY SHAPE (20 $\mu\text{m}$ IN Y DIRECTION)	NONE	—	○	○	○	△	✗	✗
	DIFFUSION PLATE	—	○	○	○	○	△	✗
	DIFFUSION PLATE + ONE LIGHT CONDUCTOR PLATE	—	○	○	○	○	○	△
	DIFFUSION PLATE + TWO LIGHT CONDUCTOR PLATES	—	○	○	○	○	○	△
SUBSTANTIALLY RECTANGULAY SHAPE (50 $\mu\text{m}$ IN Y DIRECTION)	NONE	—	○	○	○	△	✗	✗
	DIFFUSION PLATE	—	○	○	○	△	△	✗
	DIFFUSION PLATE + ONE LIGHT CONDUCTOR PLATE	—	○	○	○	○	△	✗
	DIFFUSION PLATE + TWO LIGHT CONDUCTOR PLATES	—	○	○	○	○	○	△
SUBSTANTIALLY RECTANGULAY SHAPE (100 $\mu\text{m}$ IN Y DIRECTION)	NONE	—	○	○	△	✗	✗	✗
	DIFFUSION PLATE	—	○	○	○	△	✗	✗
	DIFFUSION PLATE + ONE LIGHT CONDUCTOR PLATE	—	○	○	○	○	△	✗
	DIFFUSION PLATE + TWO LIGHT CONDUCTOR PLATES	—	○	○	○	○	○	△
SUBSTANTIALLY RECTANGULAY SHAPE (200 $\mu\text{m}$ IN Y DIRECTION)	NONE	—	○	△	✗	✗	✗	✗
	DIFFUSION PLATE	—	○	○	○	△	✗	✗
	DIFFUSION PLATE + ONE LIGHT CONDUCTOR PLATE	—	○	○	○	○	△	✗
	DIFFUSION PLATE + TWO LIGHT CONDUCTOR PLATES	—	○	○	○	○	○	△
SUBSTANTIALLY RECTANGULAY SHAPE (400 $\mu\text{m}$ IN Y DIRECTION)	NONE	—	○	△	✗	✗	✗	✗
	DIFFUSION PLATE	—	○	○	○	△	✗	✗
	DIFFUSION PLATE + ONE LIGHT CONDUCTOR PLATE	—	○	○	○	○	△	✗
	DIFFUSION PLATE + TWO LIGHT CONDUCTOR PLATES	—	○	○	○	○	○	△



○

DOT VISIBILITY NONE

△

SOMETIMES DOT VISIBILITY EXISTS

✗

DOT VISIBILITY EXISTS

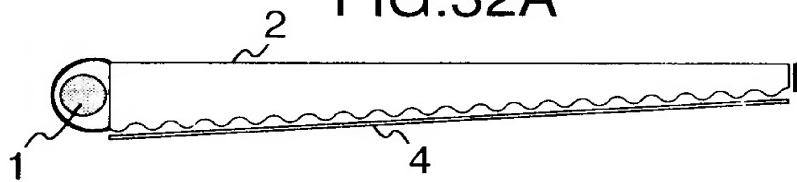
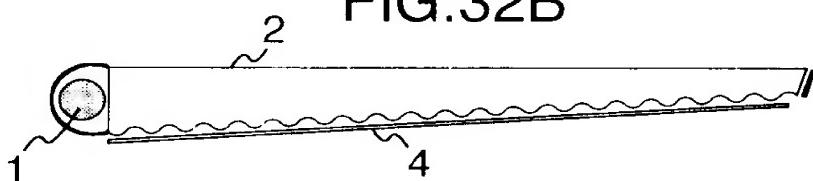
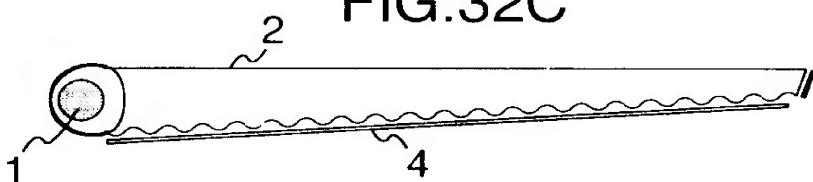
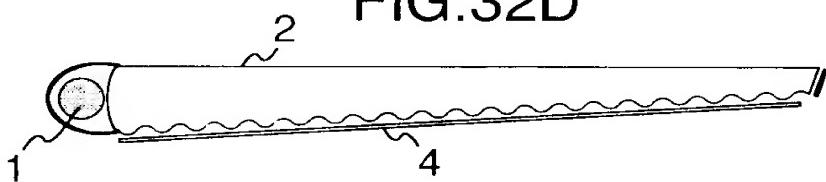
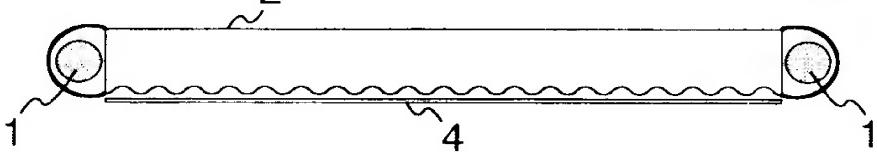
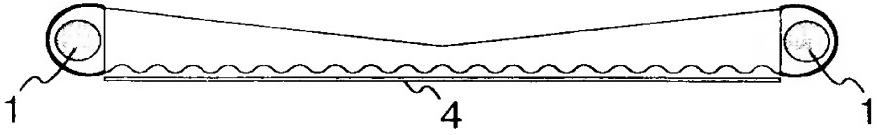
**FIG.32A****FIG.32B****FIG.32C****FIG.32D****FIG.32E****FIG.32F**

FIG.33

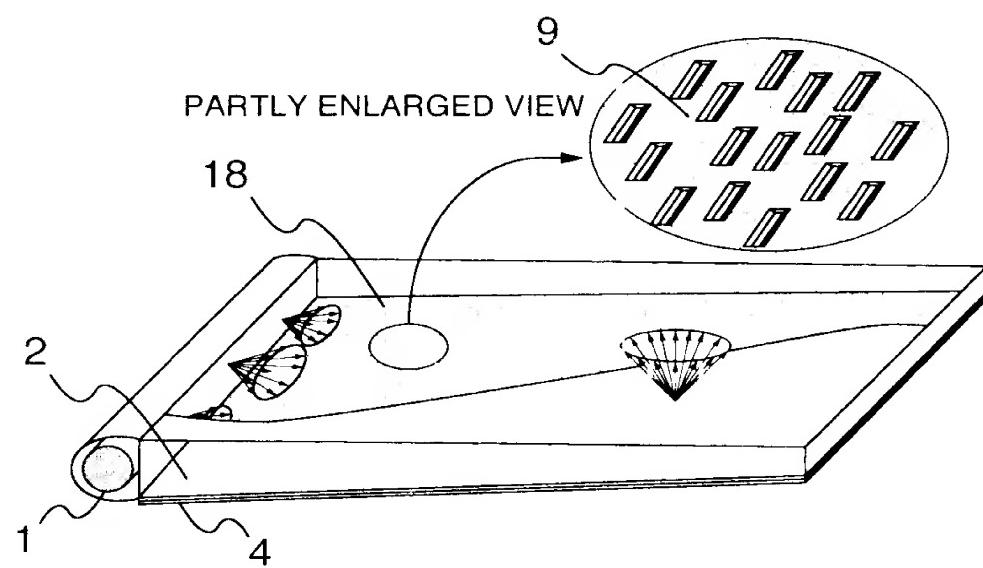
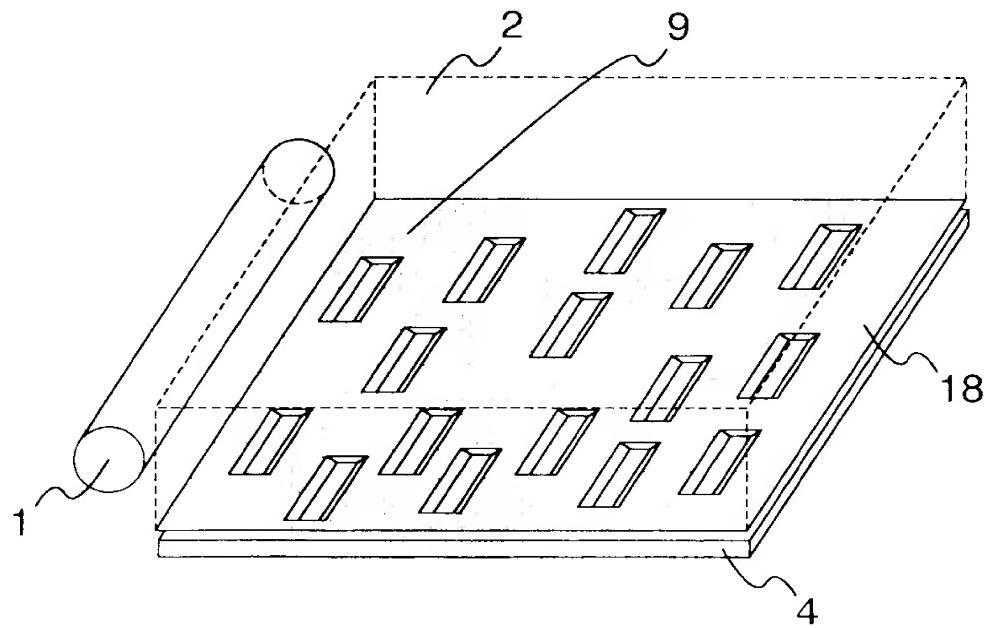


FIG.34



97/4537/5

32 / 55

FIG.35

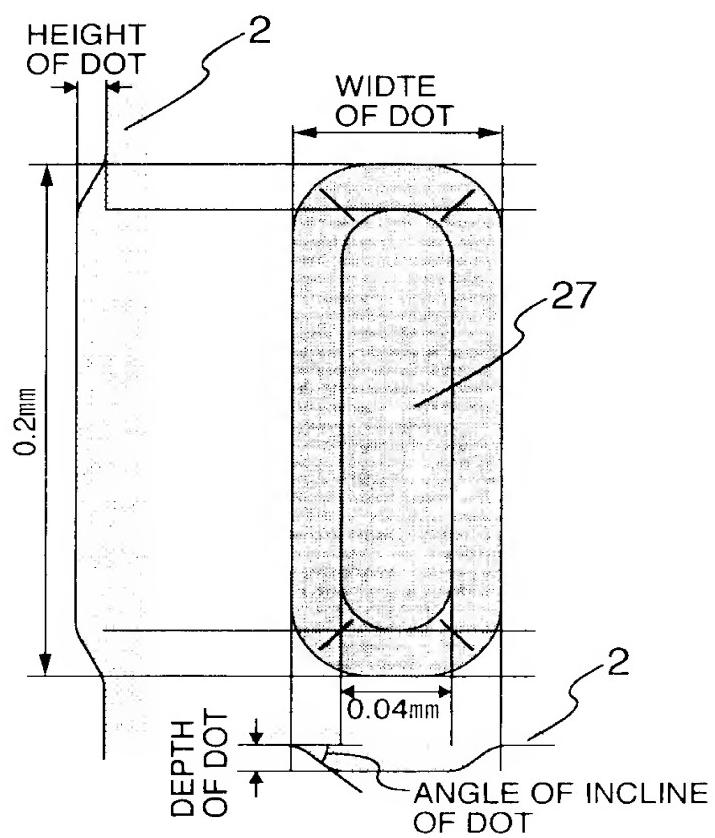
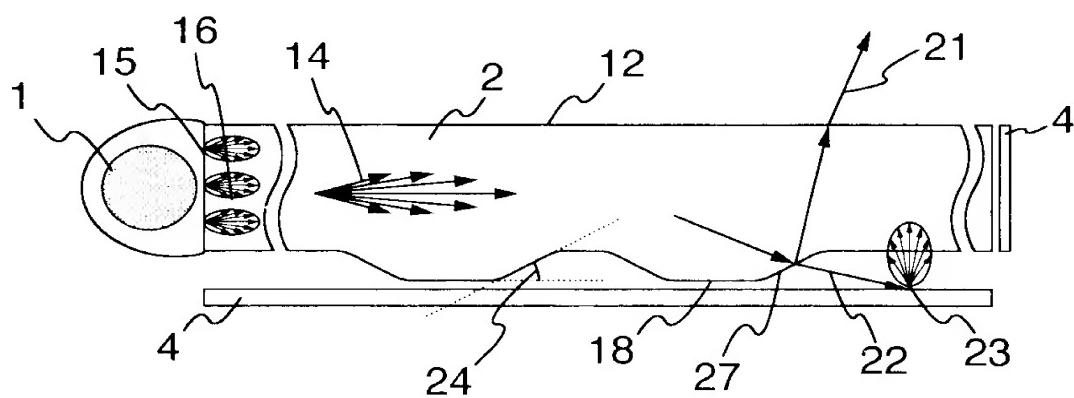


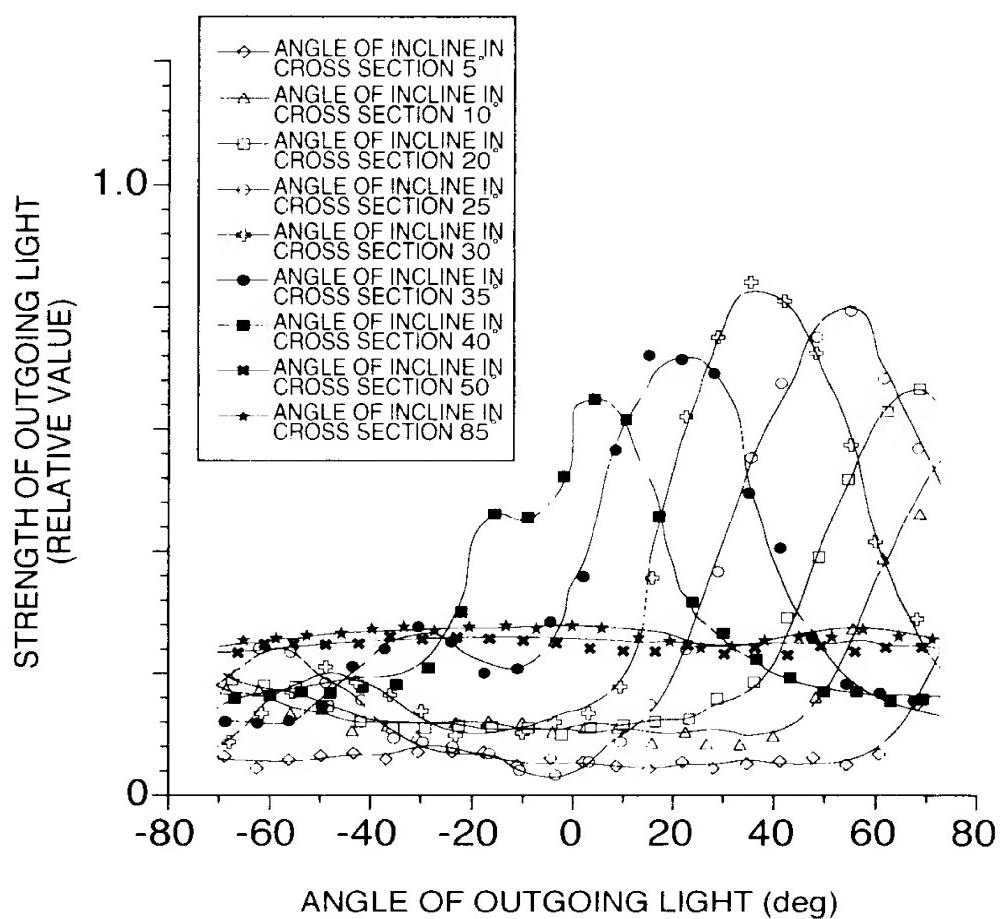
FIG.36



09/483773

34 / 55

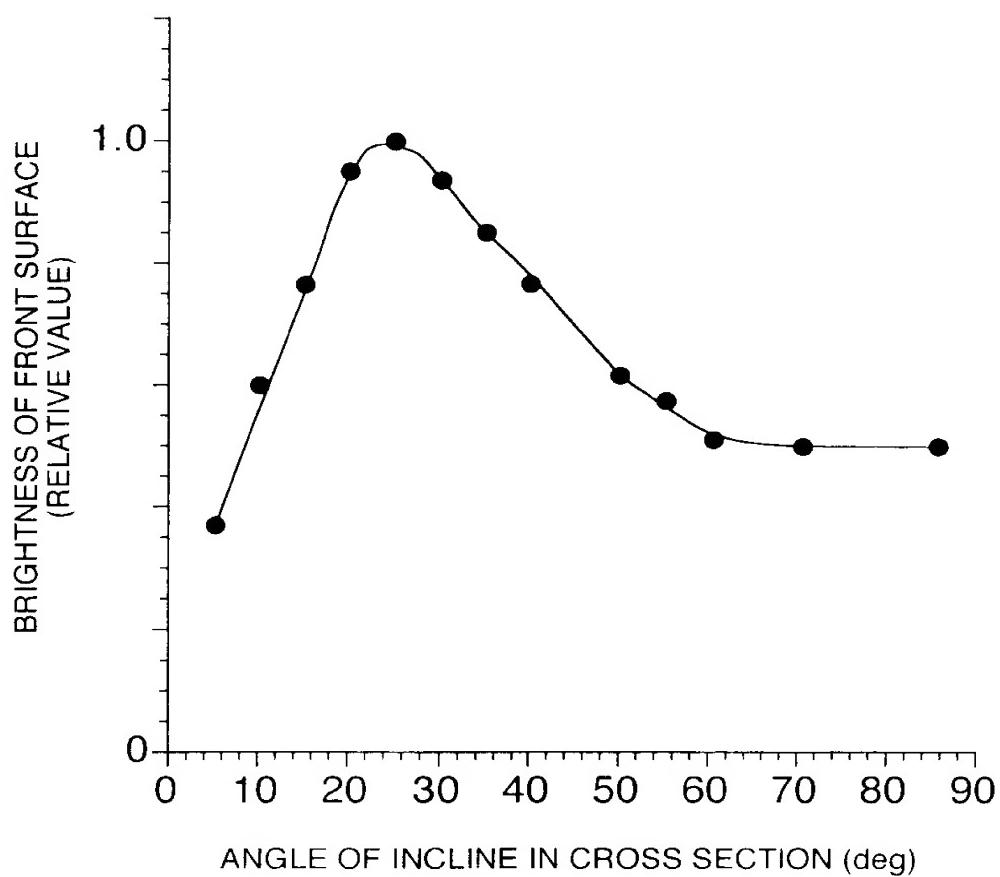
FIG.37

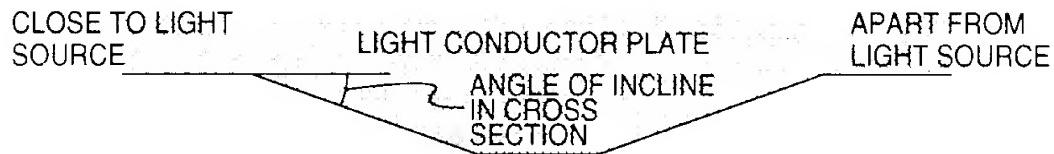
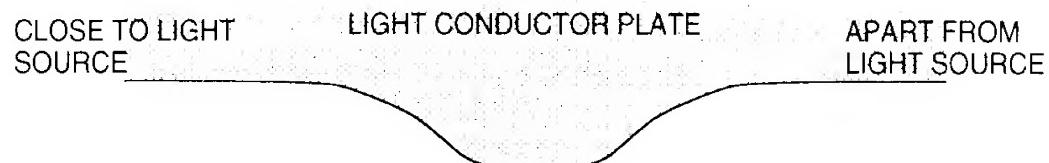
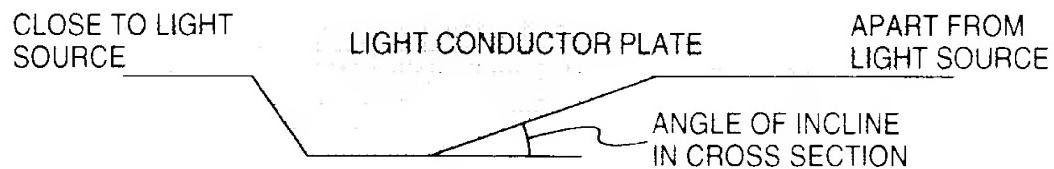


09/14/2018

35 / 55

FIG.38



**FIG.39A****FIG.39B****FIG.39C**

37 / 55

FIG.40

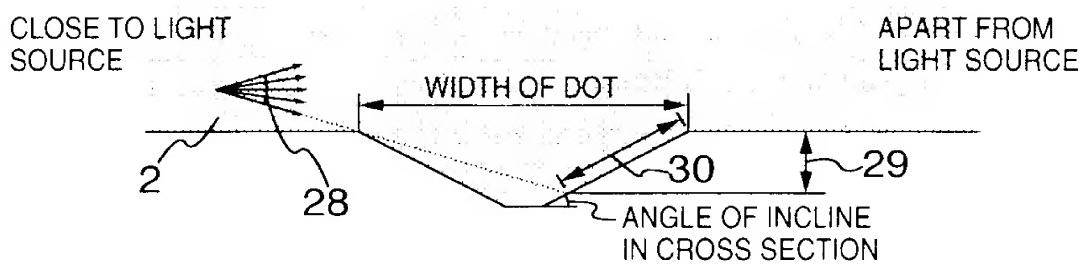


FIG.41

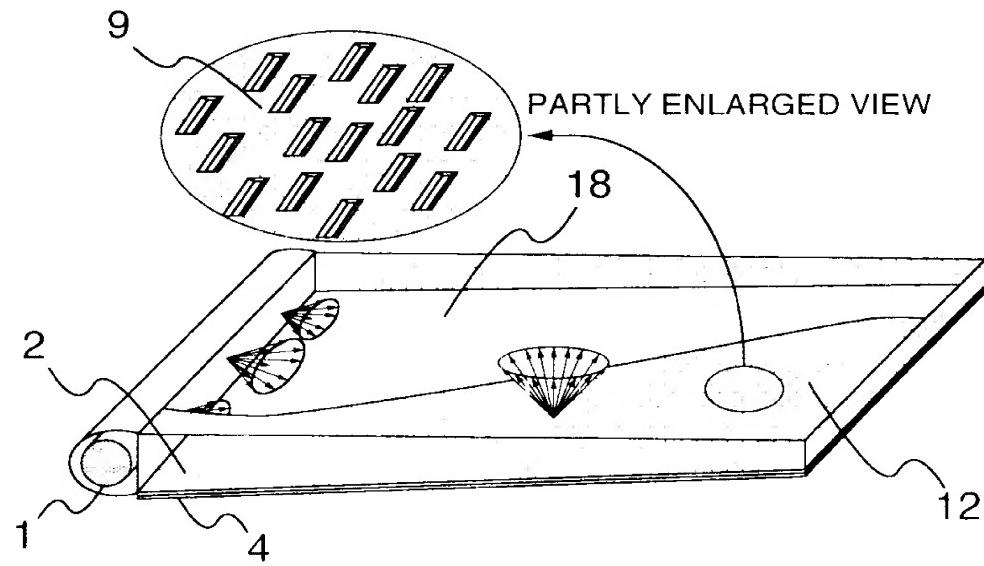


FIG.42

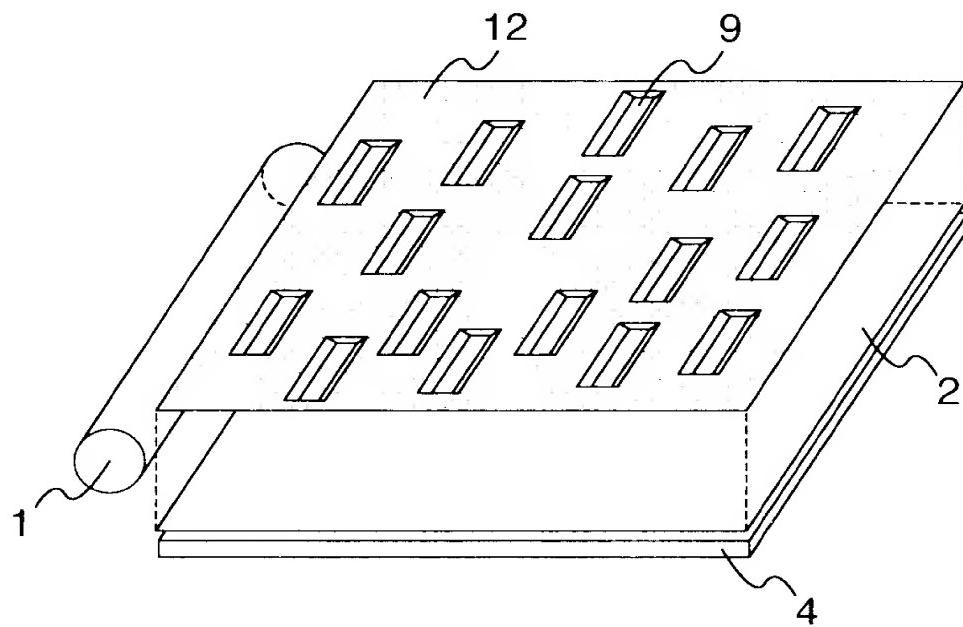
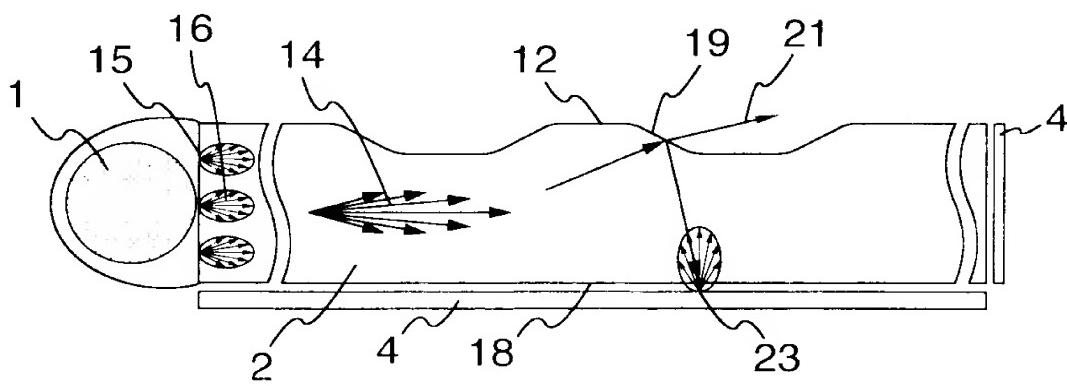


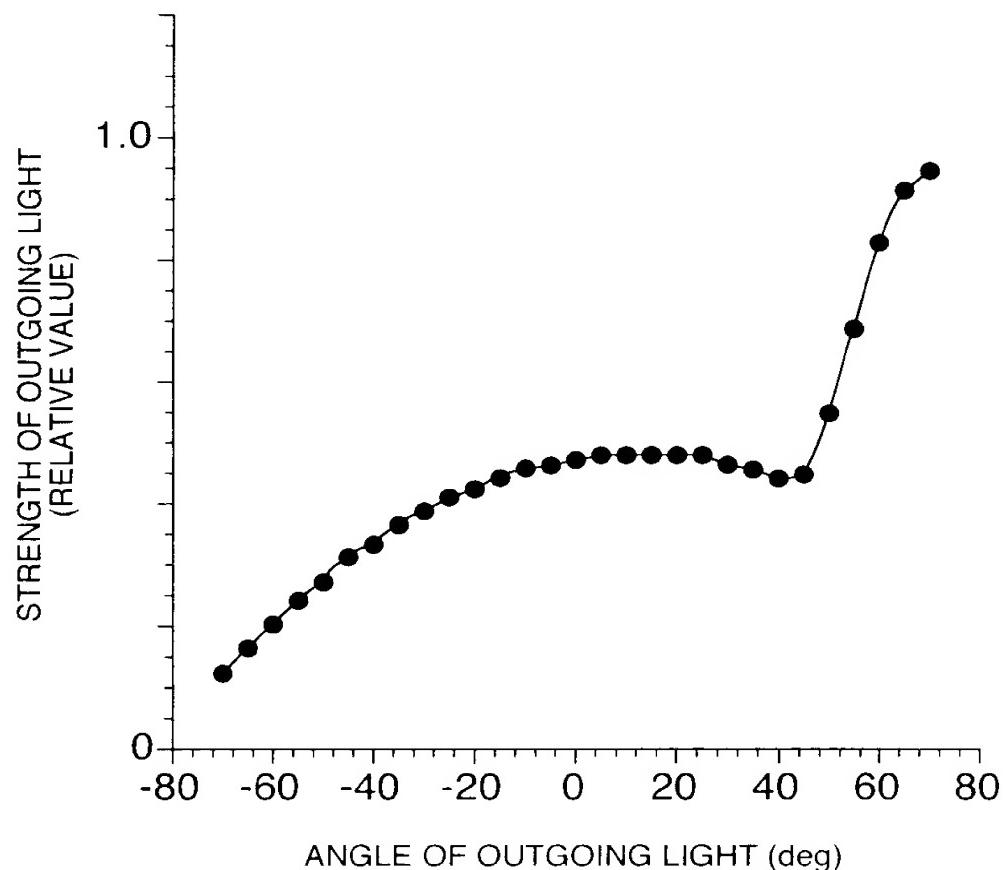
FIG.43



09/463776

39 / 55

FIG.44



09/463776

40 / 55

FIG.45

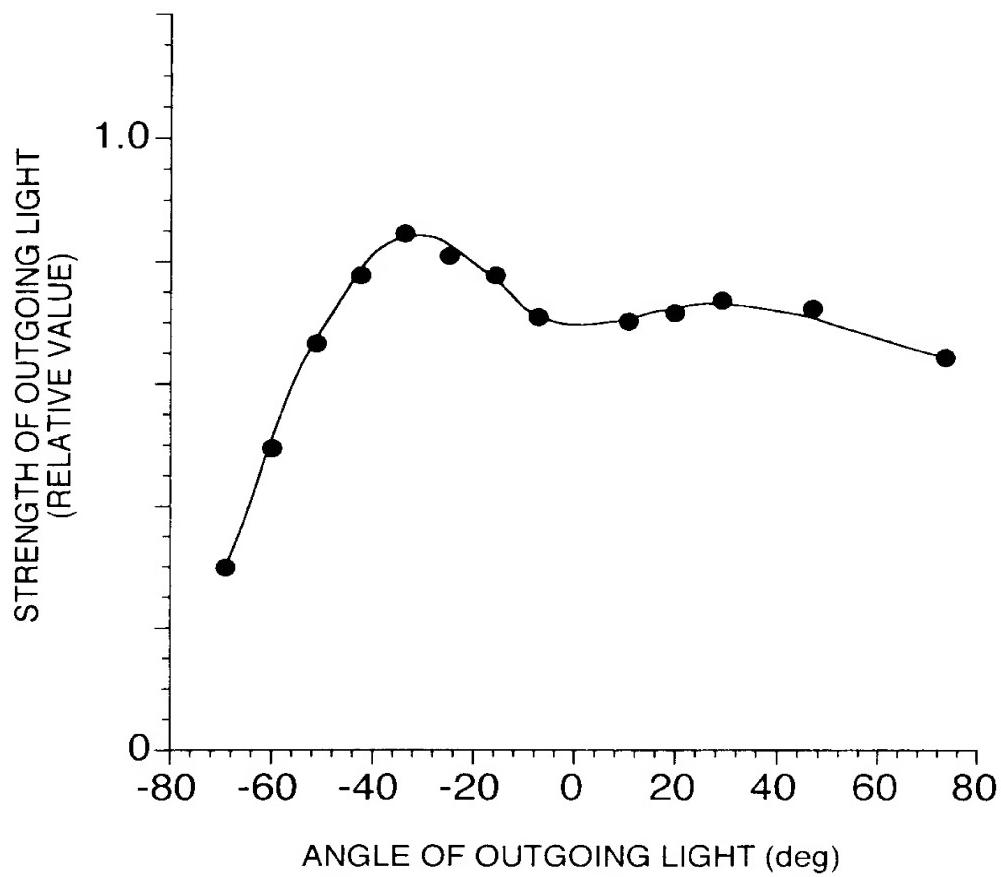
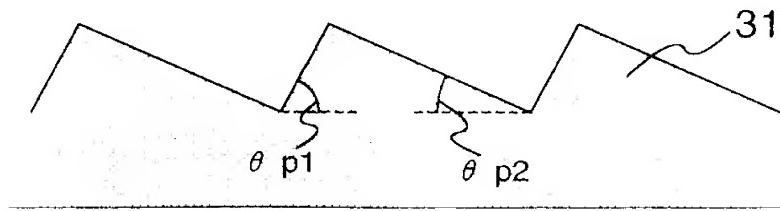
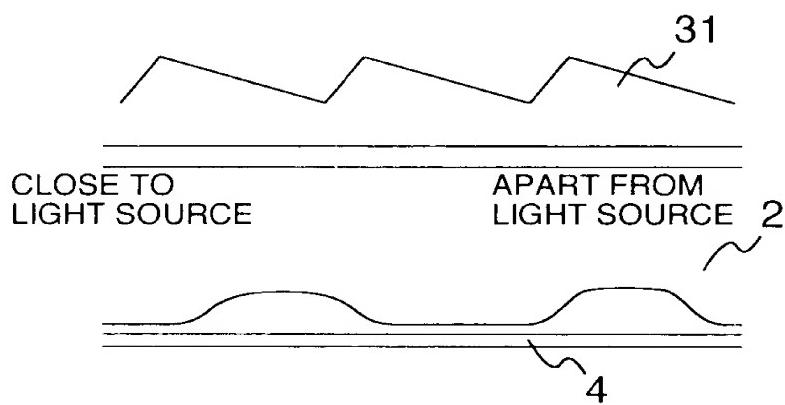
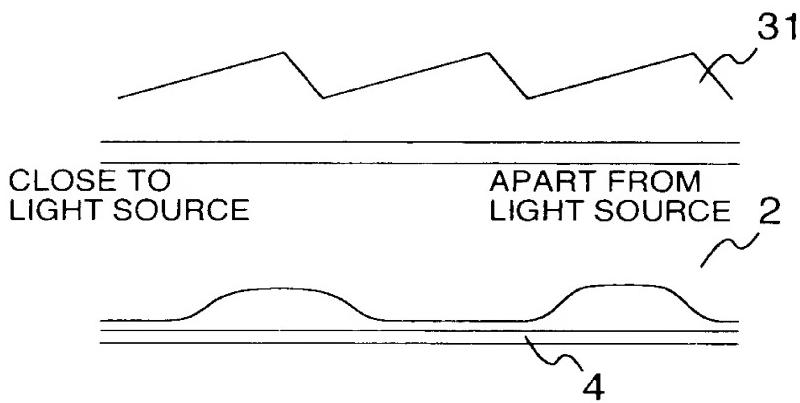


FIG.46

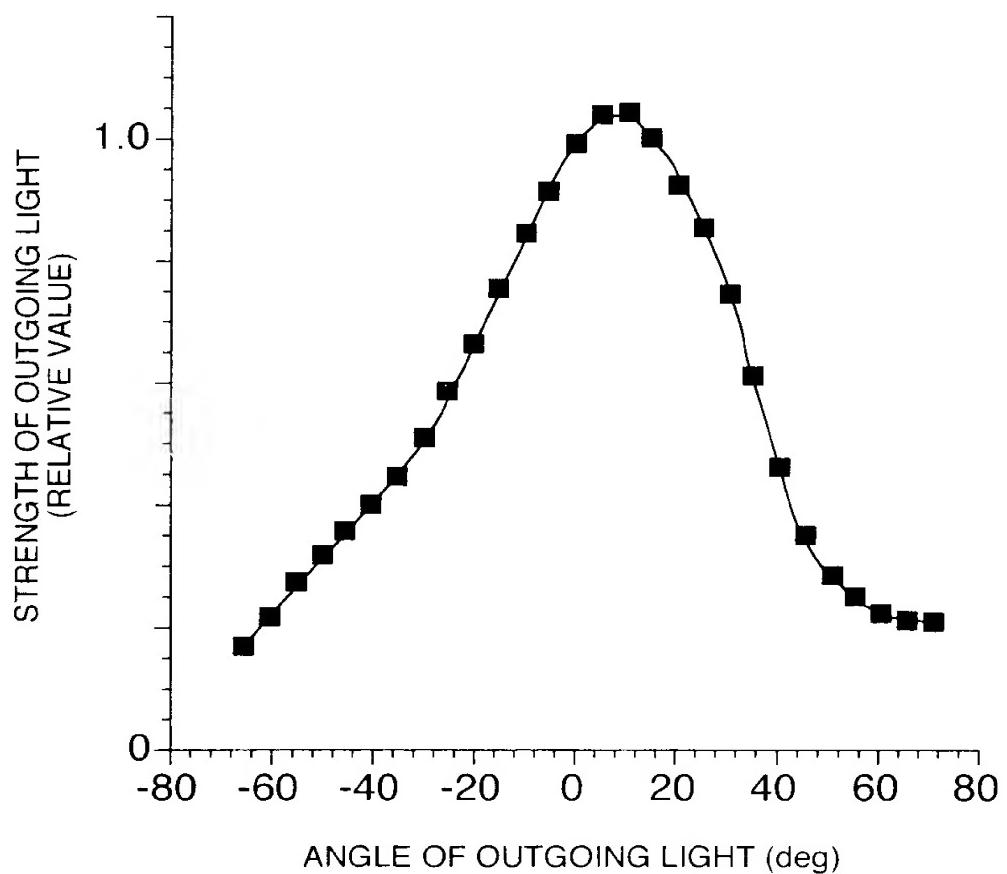


**FIG.47A****FIG.47B**

09/463776

42 / 55

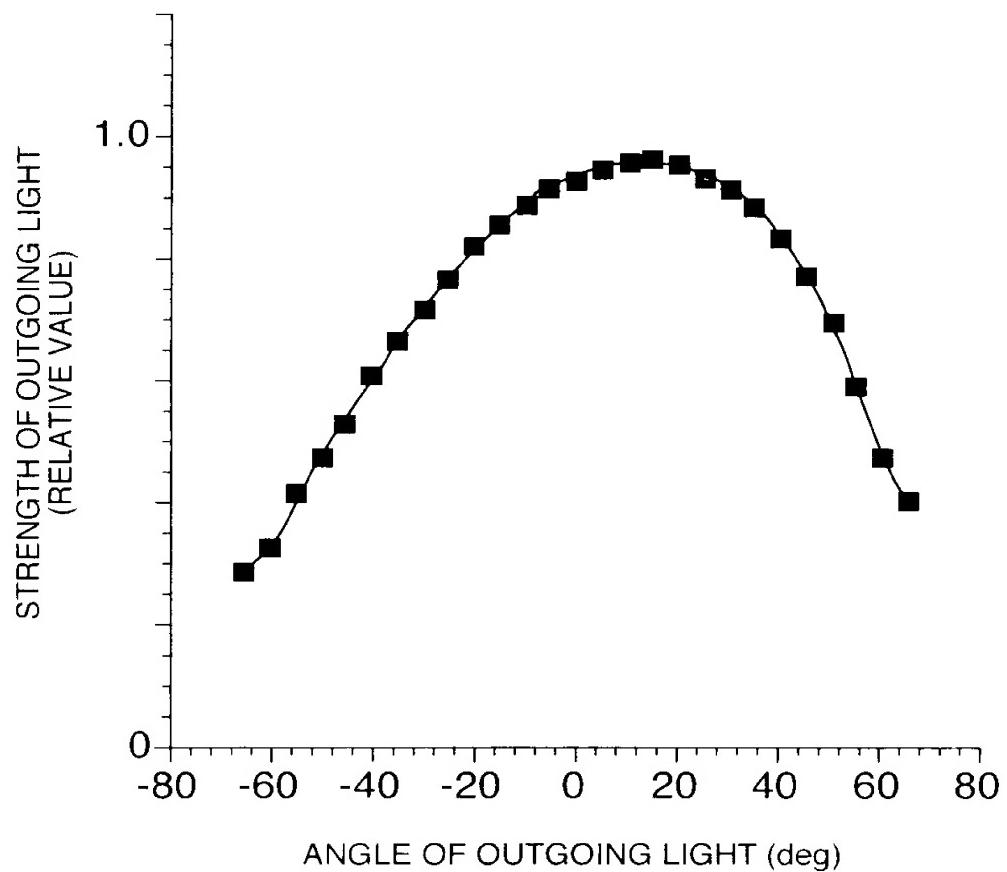
FIG.48



09/463776

43 / 55

FIG.49



09/483776

44 / 55

## FIG.50



PHOTOGRAPHED  
FROM ABOVE



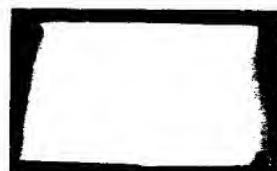
PHOTOGRAPHED  
FROM LEFT



PHOTOGRAPHED  
FROM FRONT



PHOTOGRAPHED  
FROM RIGHT

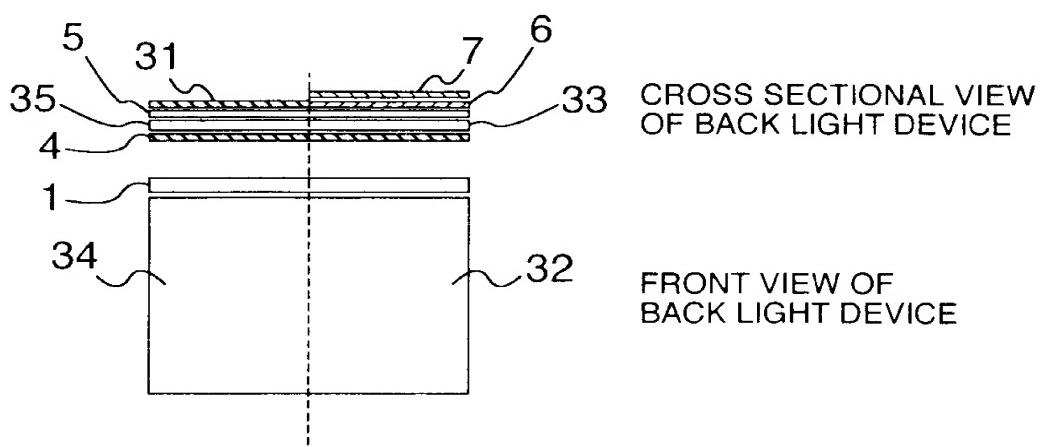


PHOTOGRAPHED  
FROM BELOW

09/463776

45 / 55

FIG.51



09/463776

46 / 55

FIG.52

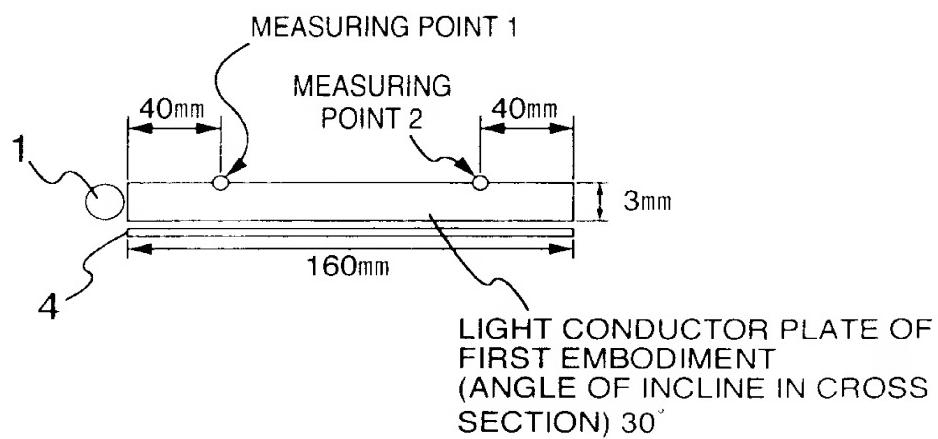
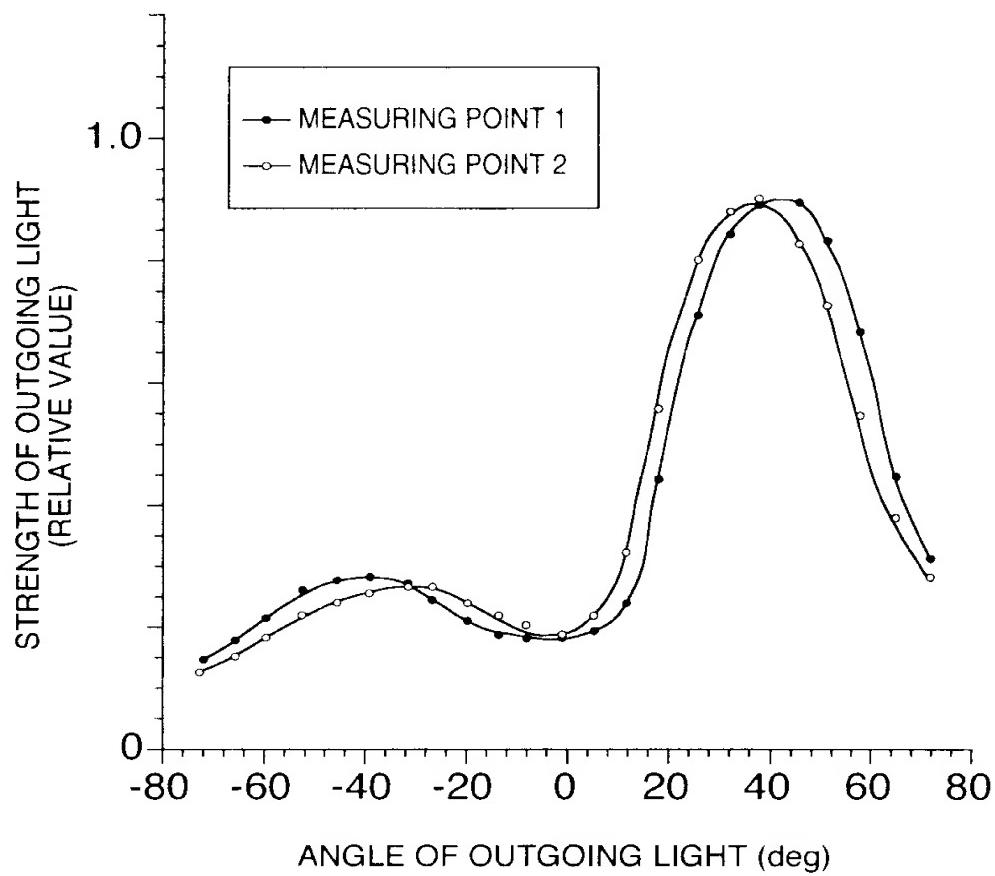
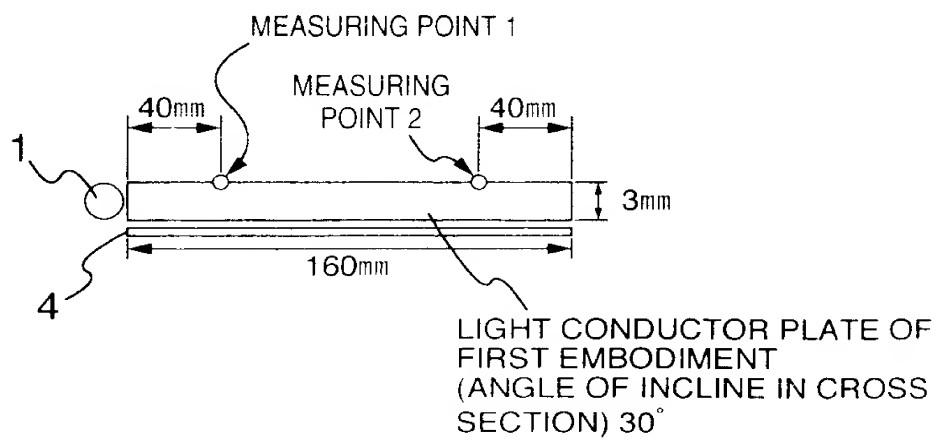
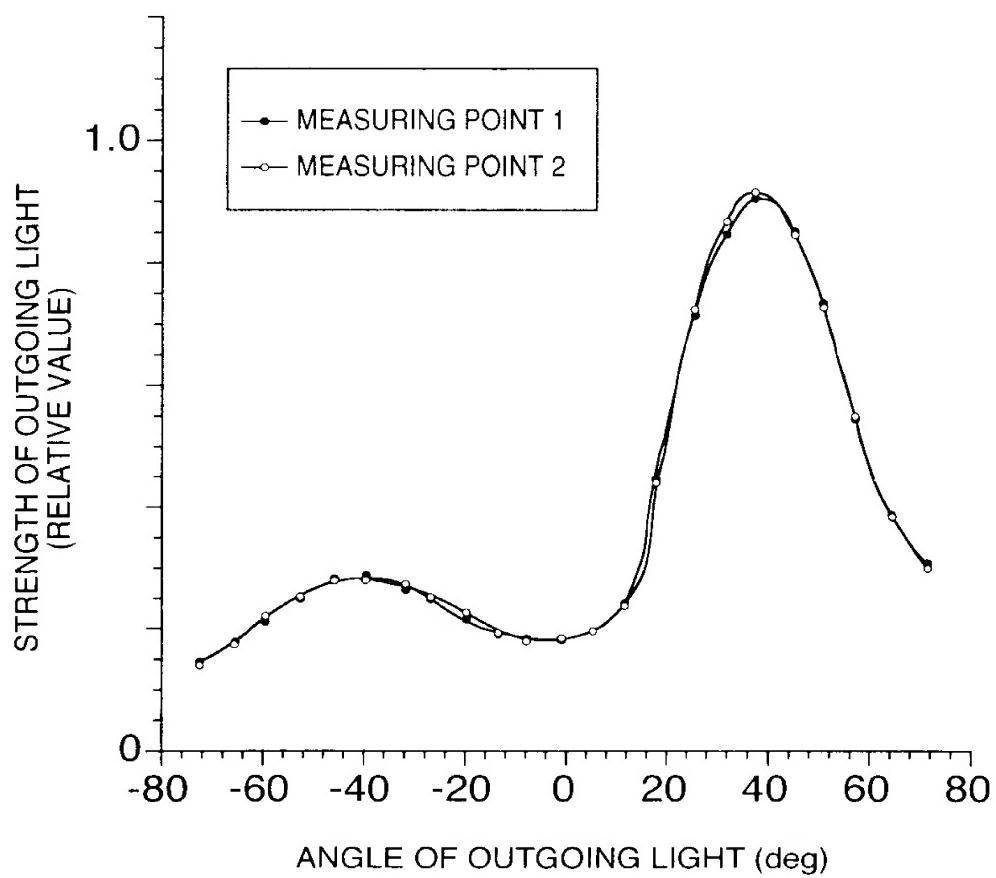


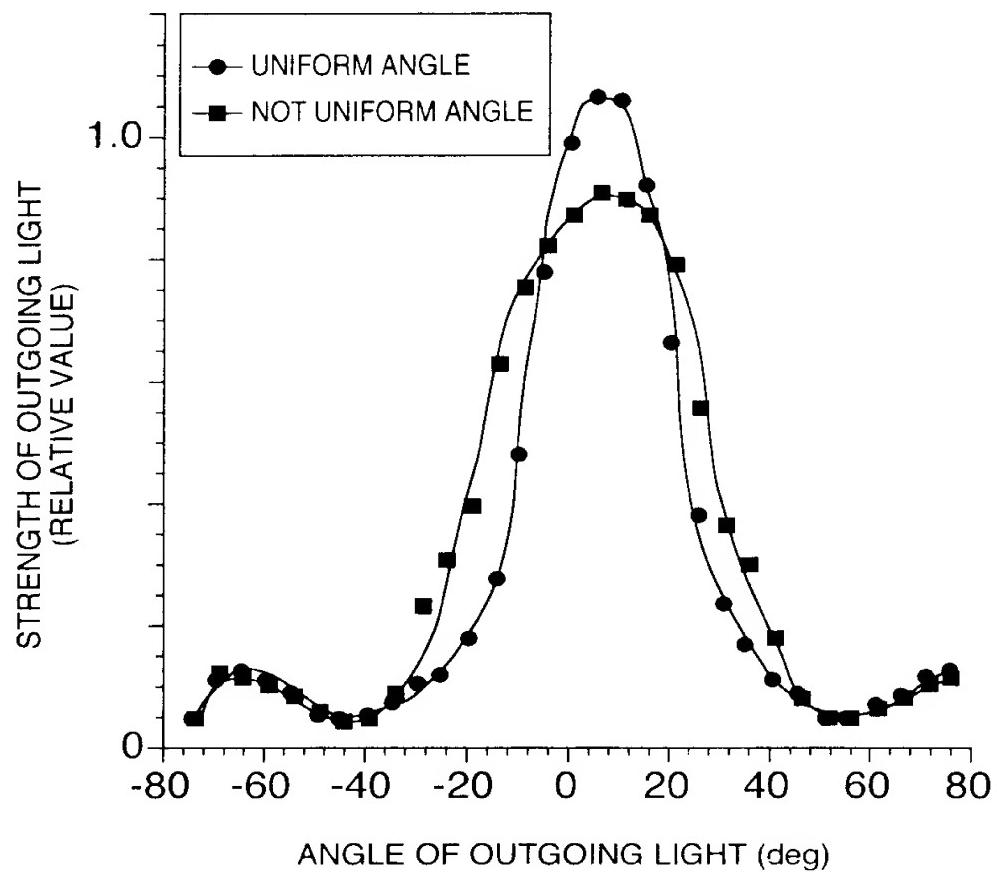
FIG.53



09/463776

48 / 55

FIG.54



09/463776

49 / 55

FIG.55

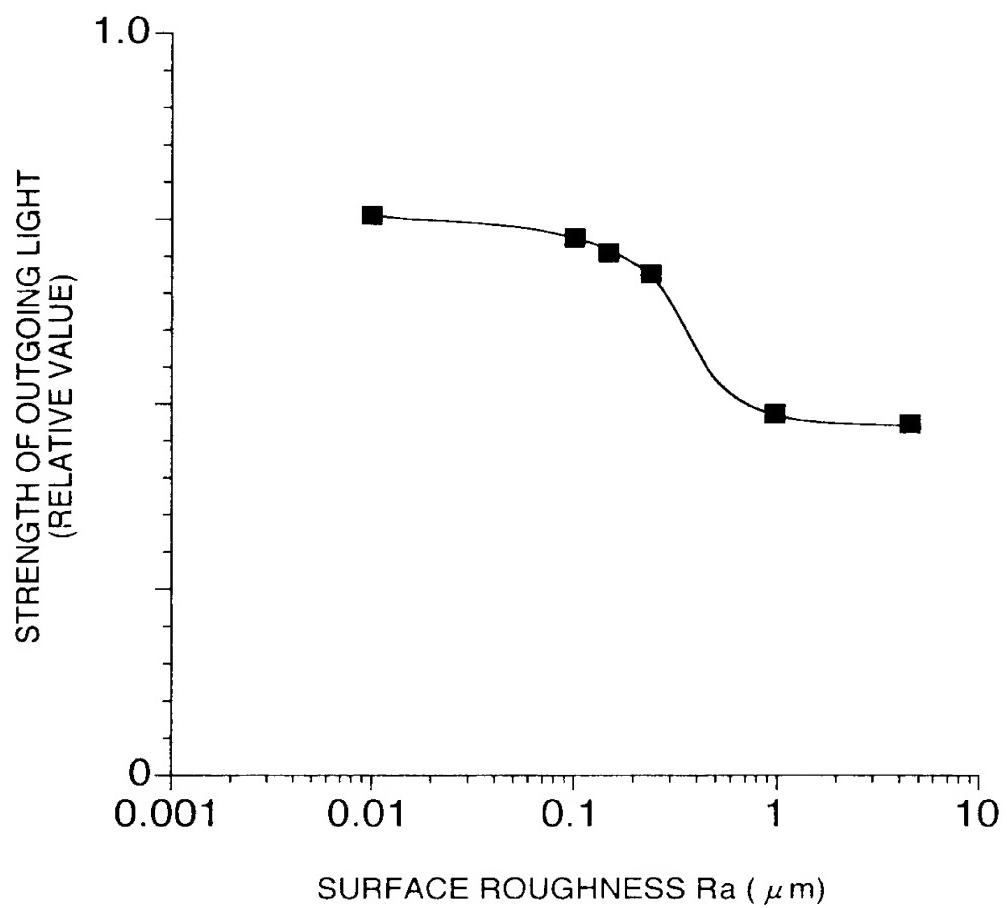


FIG.56

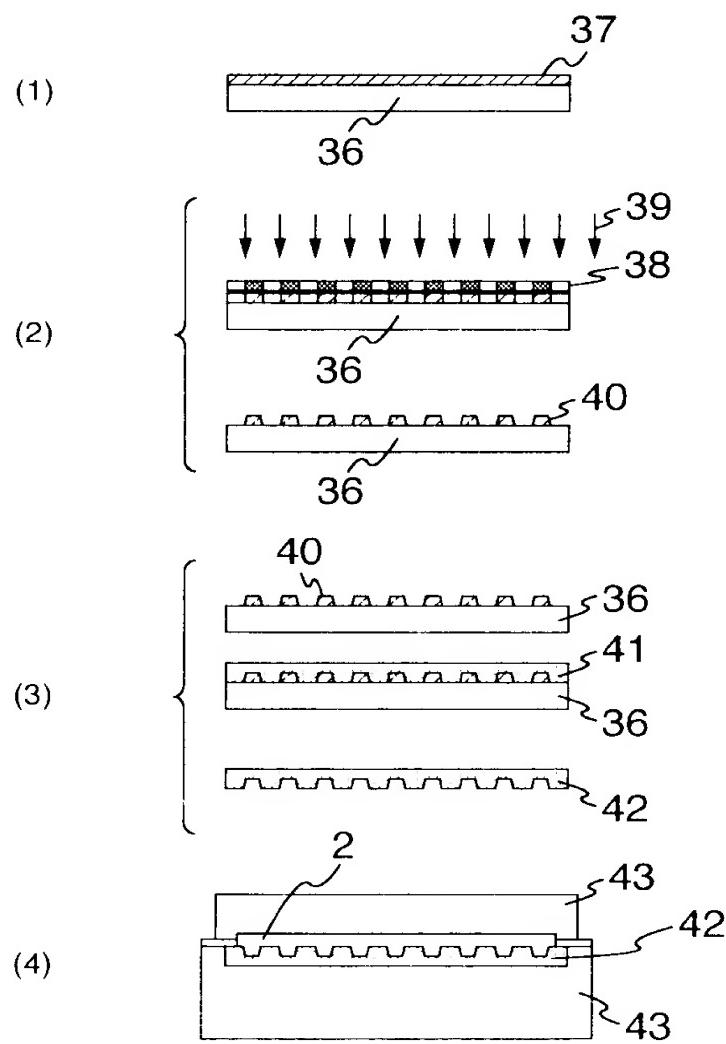


FIG.57

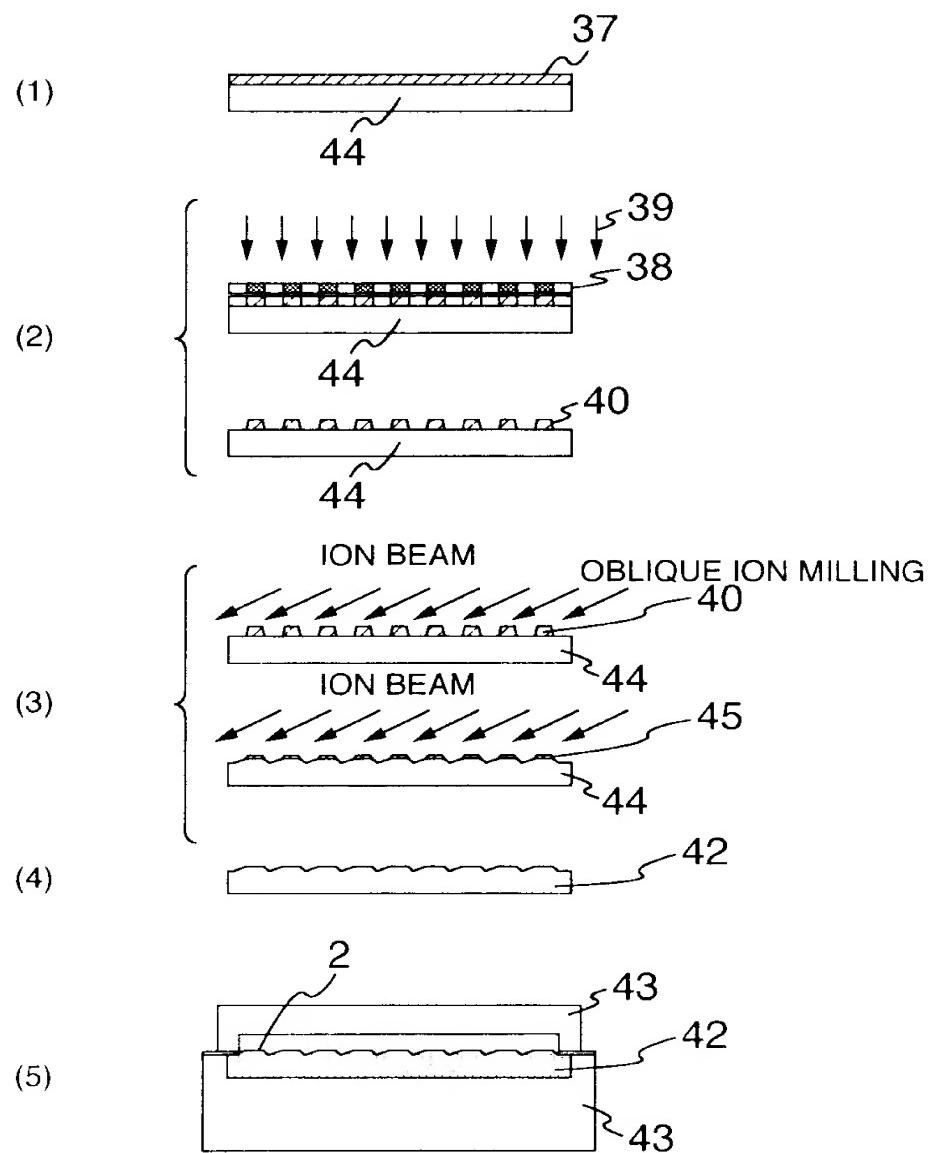
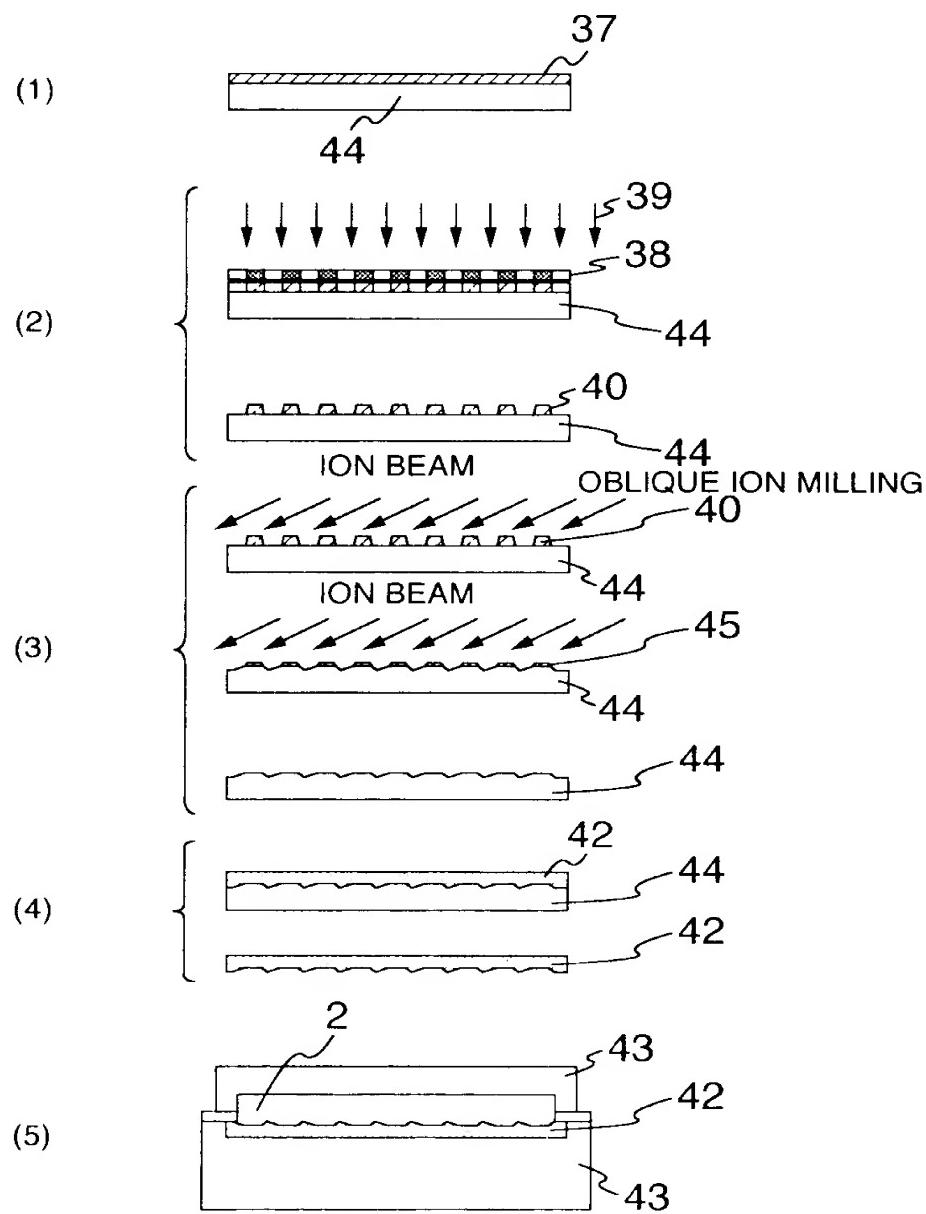


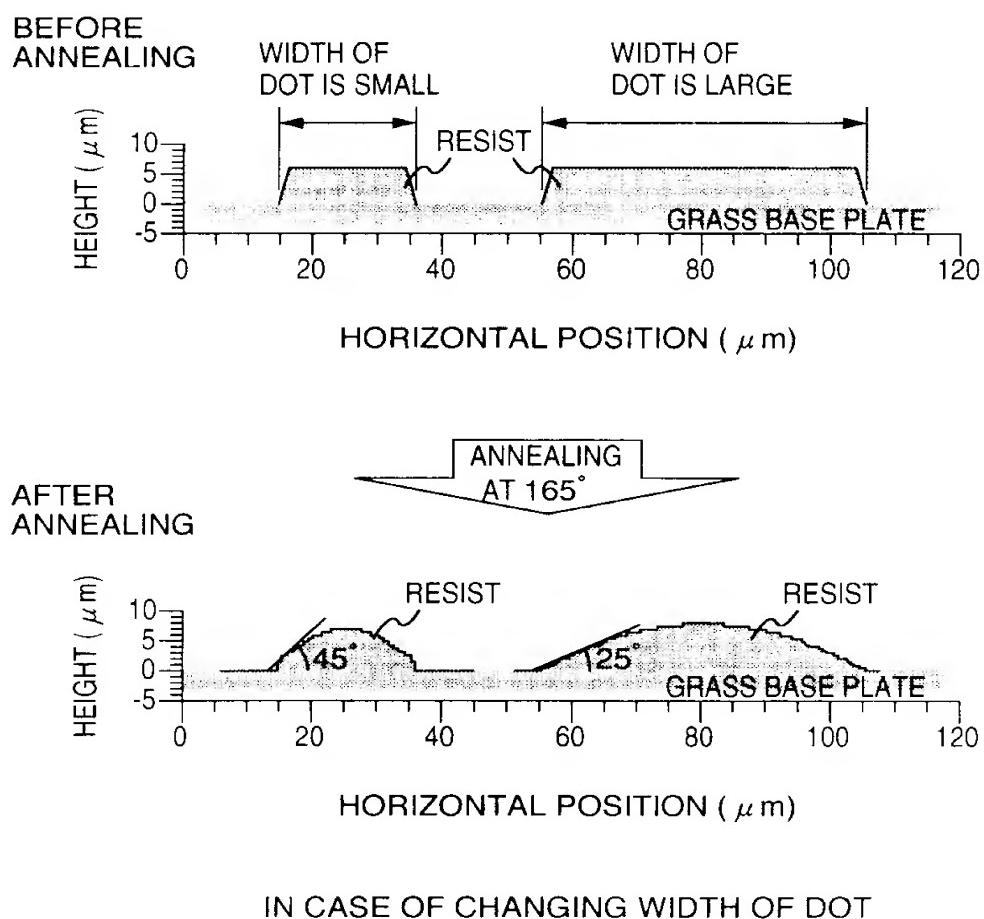
FIG.58



09.463776

53 / 55

FIG.59

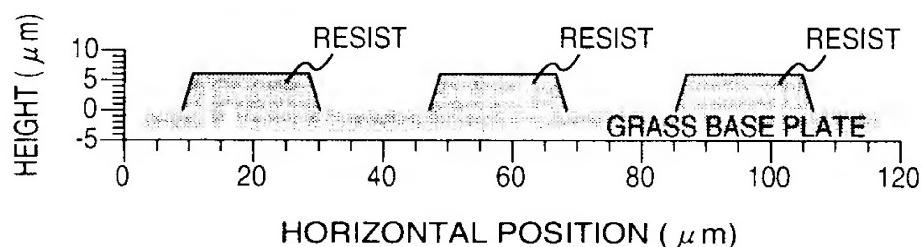


09/463776

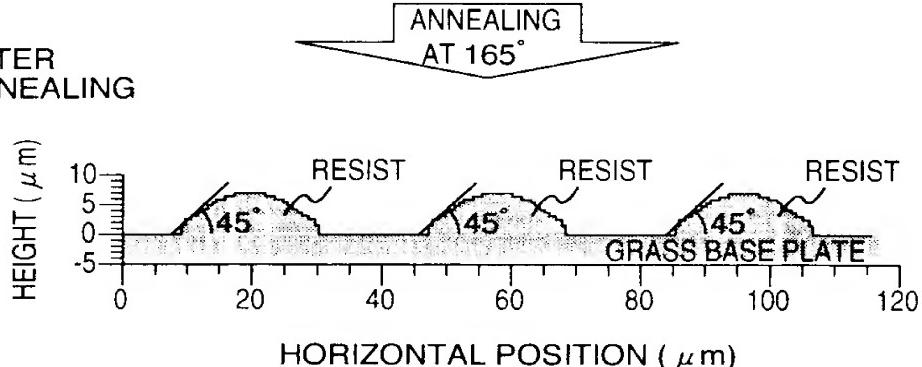
54 / 55

FIG.60

BEFORE  
ANNEALING

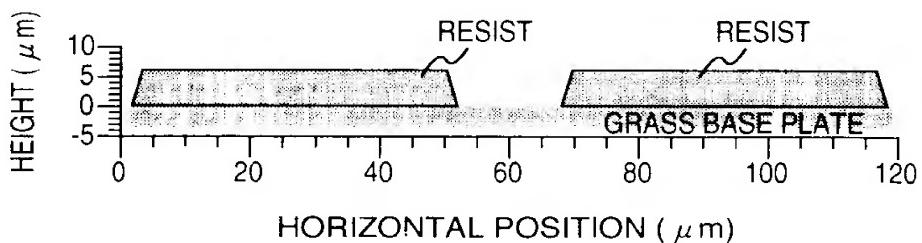


AFTER  
ANNEALING

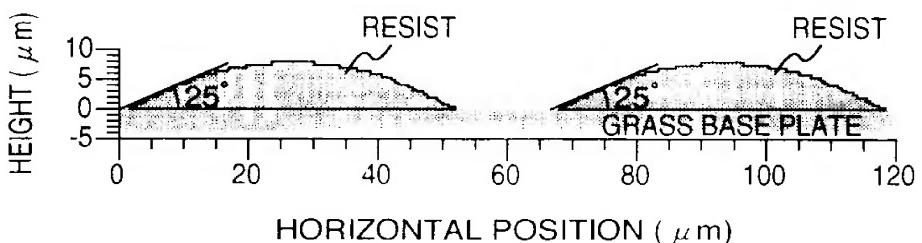


IN CASE THAT AVERAGE DISTANCE BETWEEN DOTS IS SMALL

BEFORE  
ANNEALING



AFTER  
ANNEALING



IN CASE THAT AVERAGE DISTANCE BETWEEN DOTS IS LARGE

09/463776

55 / 55

FIG.61

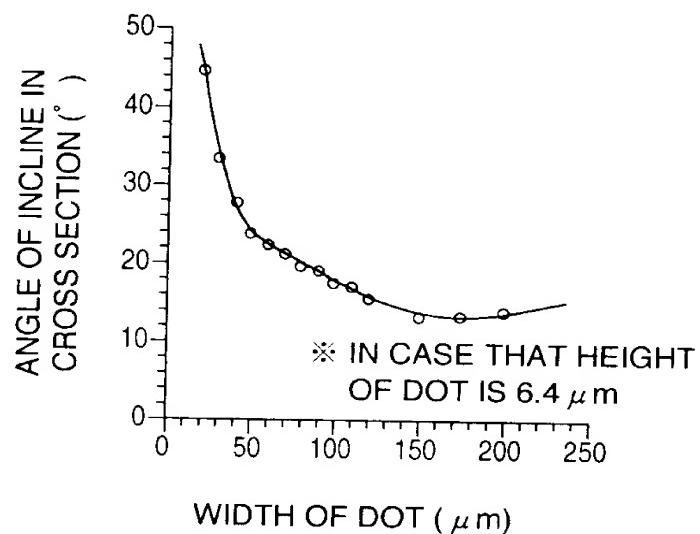


FIG.62

